Impact 1015 1U rackmount computer user manual

Part No: 85080229 issue A1

Safety Instructions

- Before you unpack your computer system, ensure you carefully read through this manual and follow any related safety or operational instructions.
- Only suitably qualified and experienced personnel should work inside the computer.
- Before commencing work within the computer ensure that the mains is disconnected from the computer and any attached peripherals.

Operation of your computer

Before operating your computer please:

- Read the equipment ratings plate and ensure that the mains circuit is suitably rated to power the equipment, to avoid risk of overloading. Do not use mains adaptors, or extenders.
- Ensure that any cables connecting to the equipment are made safe and do not present a tripping hazard.
- To avoid risk of electric shock ensure that equipment is plugged into a suitably earthed mains outlet. Only use the power cord supplied with your computer or power supply unit. Do not continue to use the cable if it is cut or damaged

---

- Ensure the computer chassis is kept away from heat sources, such as radiators and heating vents.
- Computer chassis ventilation slots must be kept clear and not blocked. Failure to do so is likely to cause the unit to overheat and become unstable.
- Avoid connecting the computer to an electrical supply which may have unacceptable interruptions, surges, spikes or noise. We recommend the use of an uninterruptible power supply (UPS), surge protector or mains conditioner to address the problem.

Electrostatic Discharge Damage

- When working on the inside of a computer system, you must be aware that many of the components are electrostatic discharge sensitive (ESD). These components can easily be damaged if suitable precautions are not taken. ESD damage is not always immediately apparent and may result in a failure many weeks later. When working on equipment we recommend the use of an ESD mat and wrist strap.

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Chapter 1
Getting Started

Thank you for choosing the Amplicon Impact 1015, a high-performance 1U rackmount system from Amplicon.

Based on the innovative **Intel® 3200** + **ICH9R** chipsets for optimal system efficiency, this system accommodates the latest Dual-Core Intel® Xeon® processor 3000 series, Quad-Core Intel® Xeon® processor 3200 series, Wolfdale and Yorkfield processors in LGA775 package and supports up to four 240-pin DDR2 667/800 DIMM slots to provide the maximum of 8GB memory capacity.

With high scalability, reliability, ease of use, and overall value, this system makes an ideal choice for value conscious customers.

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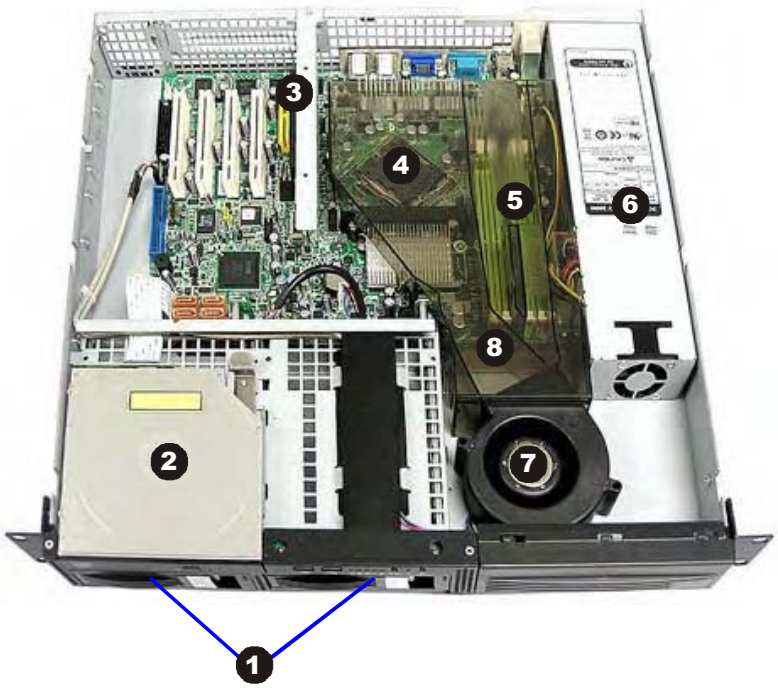
System Overview

Top View



1. Dual hotswappable HDD bays
2. Slim DVD/CDROM drive
3. PCI Express expansion slot
4. CPU socket (LGA775)
5. DIMM slots (x 4)
6. 300W 1U Power Supply Unit (PSU)
7. Blower
8. Fan duct

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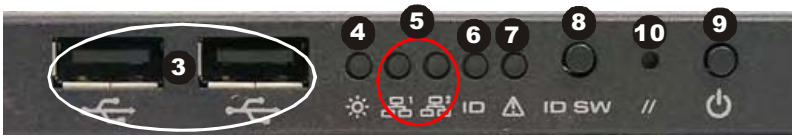
System Overview

Front View

Front Bezel



Slim DVD/CDROM drive

1. Slim DVD/CDROM drive

HDD bays

2. Hotswappable Hard Disk Drive bays

Ports

3. USB ports

LEDs

4. Power LED
   This indicator shows the power status of the system. It glows (ON) when the power is turned on.
5. Status LEDs of LAN1 / LAN2
   1. The green LED is ON when there is an active connection on the LAN port.
   2. This LED flashes when transmitting or receiving activities to or from the system are detected.
6. System ID LED
7. System Alert LED

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System Overview

Buttons

8 System ID button

9 Power button

Press this button once to shut down the system, and then once to switch on.

10 System Reset button

► **Front Bezel LEDs**

LED	Color	State	Description
Power	Blue	On	Legacy power on/ACPI S0 state
	Blue	Blink	Sleep/ACPI S1, S4, S5 state
	Off	Off	Power off
LAN1/LAN2 Activity	Green	On	LAN link
	Green	Blink	LAN access activity

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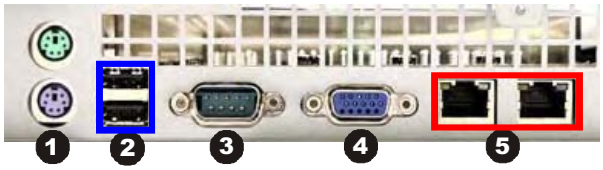
System Overview

Rear View

Rear Bezel



1. PS/2 Keyboard/Mouse Connector
2. USB ports
3. Serial port
4. VGA port
5. LAN Jacks

► Rear Bezel LEDs

LED	Color	LED State	Condition
RJ45 NIC1 / NIC2 Link Speed (Left Side)	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
RJ45 NIC1 / NIC2 Access (Right Side)	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

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System Specifications

Processor

- Support for Intel Core 2 Duo processors (default processor) and Dual-Core Intel Xeon processor 3000 series, Quad-Core Intel Xeon processor 3200 series, Wolfdale and Yorkfield processors in LGA775 package.

FSB

- 1333/ 1066/ 800 MHz

Chipset

- North Bridge: Intel 3200 chipset (Intel 3200/3210 supports PCI Express graphics)
- South Bridge: Intel ICH9R chipset

Memory

- 4 DDR2 667/800 DIMM slots (240pin / 1.8V)
- Up to 8GB memory capacity

LAN

- Intel 82573L Gigabit Ethernet controller (LAN1) & Intel 82566DM Gigabit Ethernet controller (LAN2)

Floppy

- 1 floppy port
- Supports 1 FDD with 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB

IDE

- 1 IDE port by ITE IT8213F
- Supports Ultra DMA 66/100/133 mode
- Supports PIO, Bus Master operation mode

SATA

- 4 SATAII ports by ICH9R
- Supports storage and data transfers at up to 300MB/s

RAID

- Supports RAID 0, 1

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System Specifications

Graphics

- XGI Z7 graphics controller
- Onboard 16MB Video SDRAM

Connectors

▶ **Back Panel**

- 1 PS/2 mouse port
- 1 PS/2 keyboard port
- 2 USB 2.0 ports
- 1 serial port
- 1 VGA port
- 2 Gigabit LAN jacks

▶ **Onboard Connectors**

- 3 proprietary front panel connectors (optional)
- 3 USB 2.0 connectors (6 ports)
- 1 serial port connector
- 1 TPM connector
- 1 SPI Flash ROM connector (for debugging)
- 1 chassis intrusion connector

Slots

- 1 PCI Express x16 slot (with x8 signal)
- *1 PCI Express x4 slot
- *4 PCI slots (supports 3.3V/ 5V PCI bus interface)
  (*Available on motherboard only)

Certification

- Safety: UL, CB, BSMI
- EMC: FCC Class A, CE Class A, BSMI

Chassis

- Form factor: 1U 19" rackmount
- Externally hotswappable HDD bay x 2
- Slim DVD/CDROM drive bay x 1
- Full height PCI Express slot x 1
- Chassis dimension: 428(W) X 44.4(H) X 442(D) mm

Power Supply

- 300 Watt
  - ▶ PFC function: Yes
  - ▶ Form factor: SSI EPS 1U
  - ▶ Safety mark: UL, cUL, TUV, CE-mark, CB

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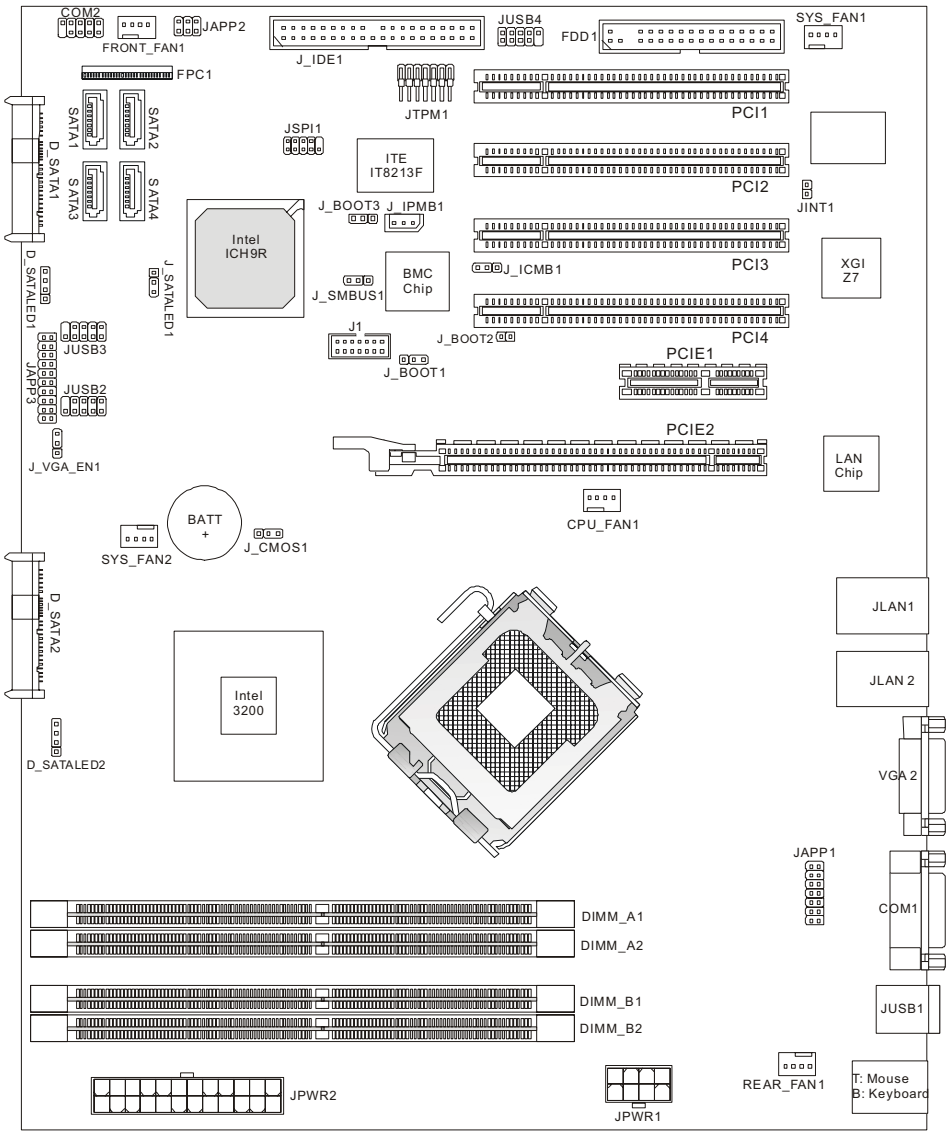
Mainboard Layout



ATX form factor Server Board

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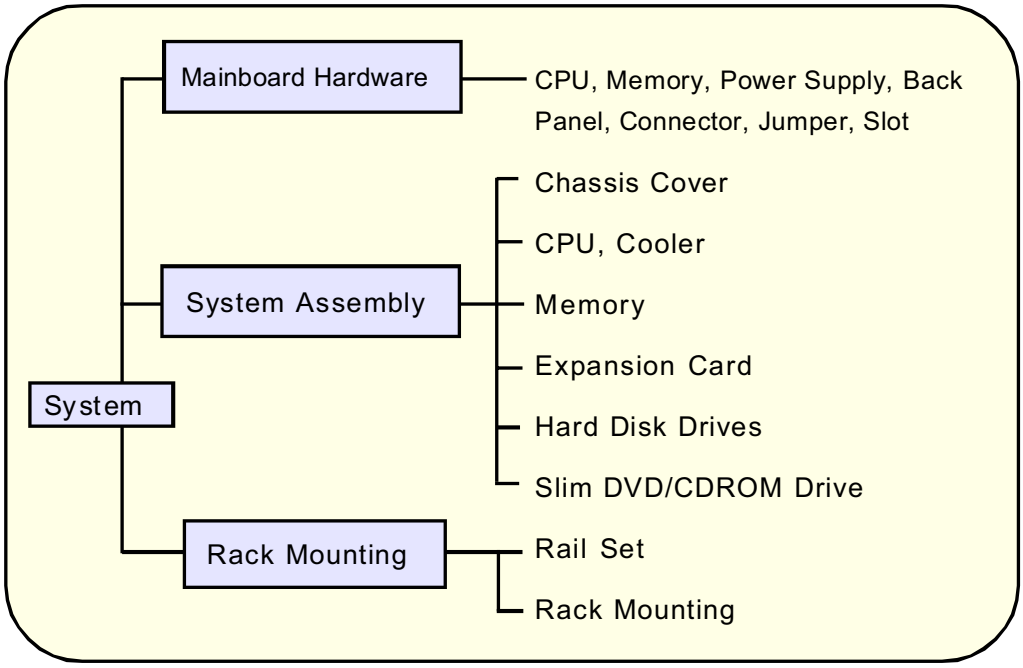
Chapter 2

Hardware Setup

Refer to the system assembly flowchart and the chart below to determine the proper sequence of removing or installing components to the server.



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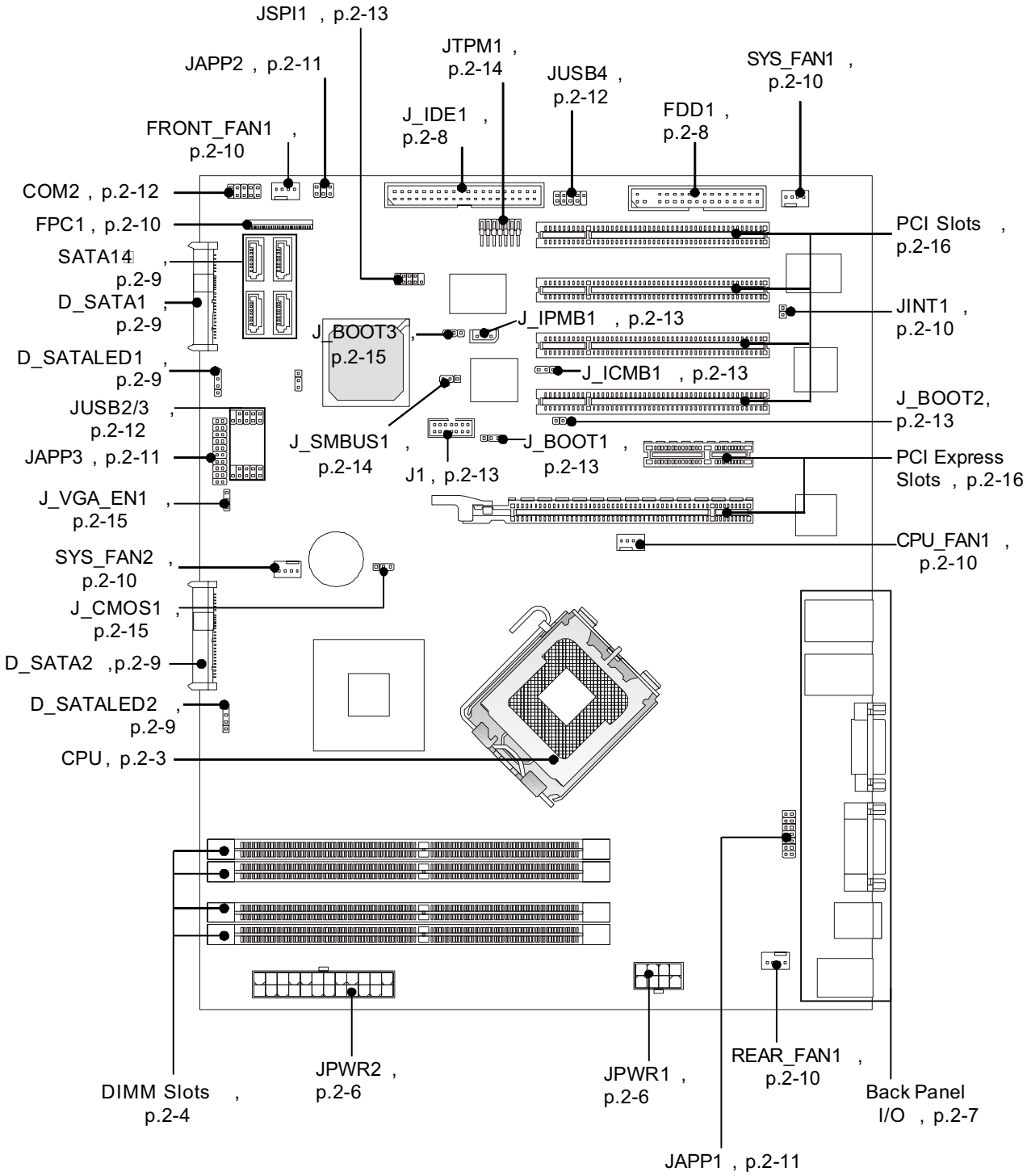
Quick Components Guide



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CPU (Central Processing Unit)

This mainboard supports dual-core Intel® Xeon® processor 3000 series, quad-core Intel® Xeon® processor 3200 series, Wolfdale and Yorkfield processors in LGA775 package. When you install the CPU, **make sure that you install the cooler to prevent overheating.** If you do not have the CPU cooler, consult your dealer before turning on the computer.

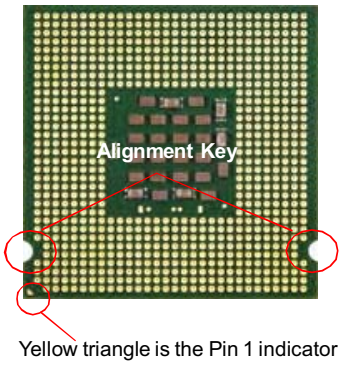
Important

Overheating
Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.

Replaceing the CPU
While replacing the CPU, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.

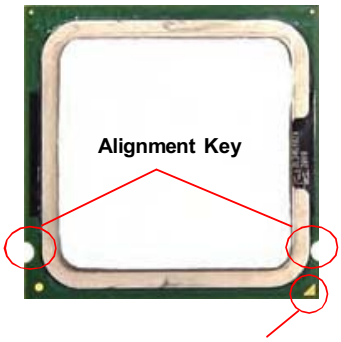
Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 775 CPU. Remember to apply some thermal paste on it for better heat dispersion.



Yellow triangle is the Pin 1 indicator

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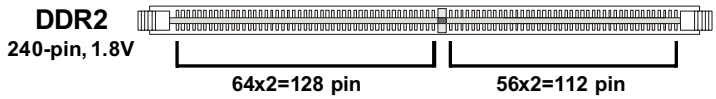
Memory

These DIMM slots are intended for system memory modules.



Dual-Channel Mode Population Rule

In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Dual-Channel mode is enabled when the installed memory capacities of both DIMM channels are equal. If different speed DIMMs are used between channels, the slowest memory timing will be used.

Dual-Channel mode can be achieved with two, three or four DIMMs. To achieve Dual-Channel mode, the following conditions must be met:

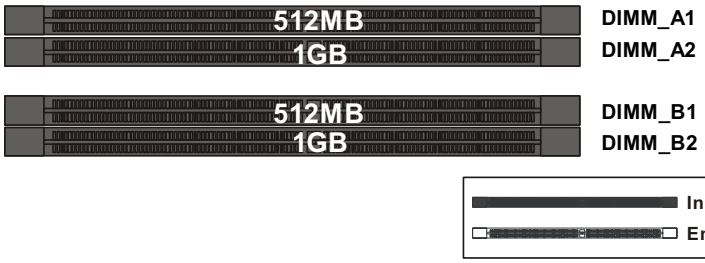
* Matched DIMM configuration in each channel
* Same Density (128MB, 256MB, 512MB, etc.)
* Matched in both Channel A and Channel B memory channels
* Populate symmetrical memory slots (Slot 1 or Slot 2)

Configurations that do not match the above conditions will revert to Single-Channel mode.

2 DIMMs

3 DIMMs

4 DIMMs



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Memory

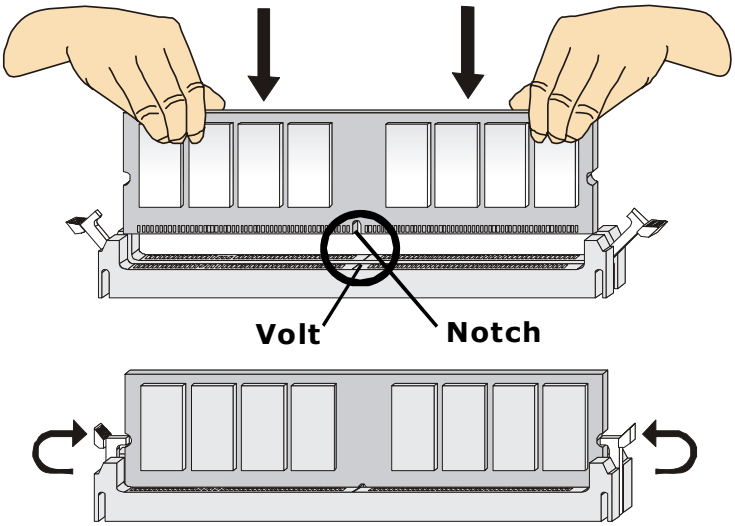
Installing Memory Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.

Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

3. The plastic clip at each side of the DIMM slot will automatically close.



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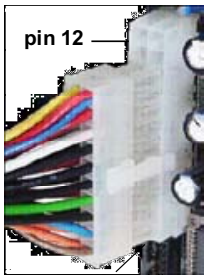
Power Supply

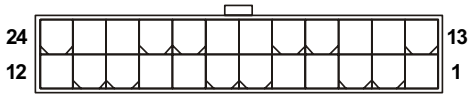
24-Pin System Power Connector: JPWR2

This connector allows you to connect a 24-pin power supply. To connect the 24-pin power supply, make sure the power supply connector is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

You may use the 20-pin power supply as well. If you'd like to use the 20-pin power supply, please align your power supply connector with pin 1 & pin 13. There is also a foolproof design on pin 11, 12, 23 & 24 to avoid wrong installation.



JPWR2



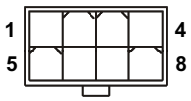
Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	Res
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

8-Pin CPU Power Connector: JPWR1

This connector provides 12V power output to the CPU.

JPWR1



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

Important

1. *Make sure that all connectors are connected to proper power supplies to ensure stable operation of the mainboard.*
2. *Power supply of 300 watts (and above) is highly recommended for system stability.*

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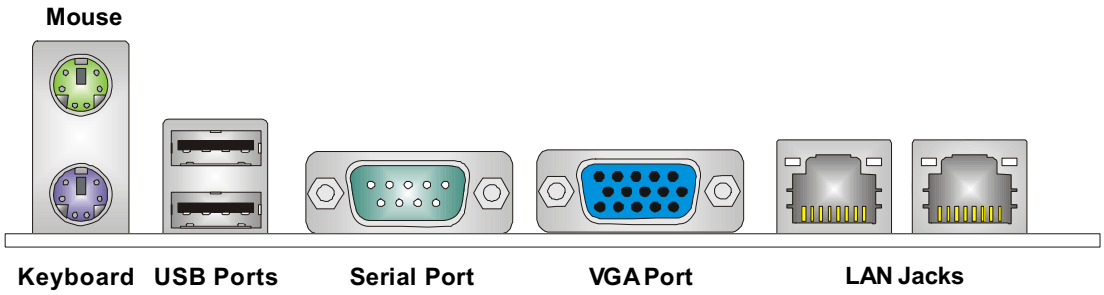
Back Panel I/O



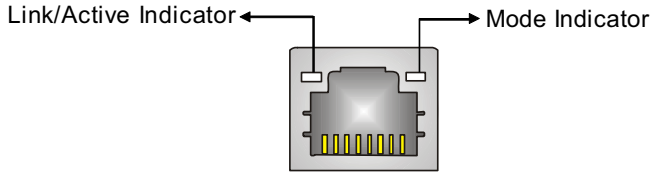
▶ Mouse/Keyboard
The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

▶ USB Port
The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

▶ Serial Port
The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

▶ VGA Port
The DE-15 female connector is provided for monitor.

▶ LAN
The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.



RJ-45 LAN Jack

LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

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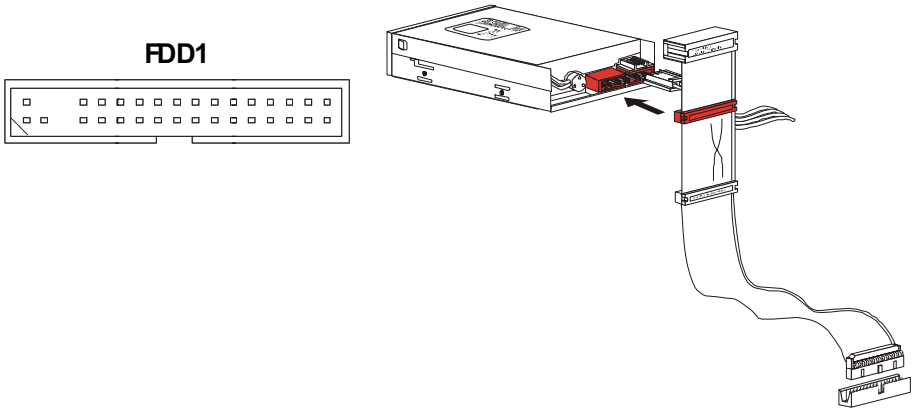
Connector

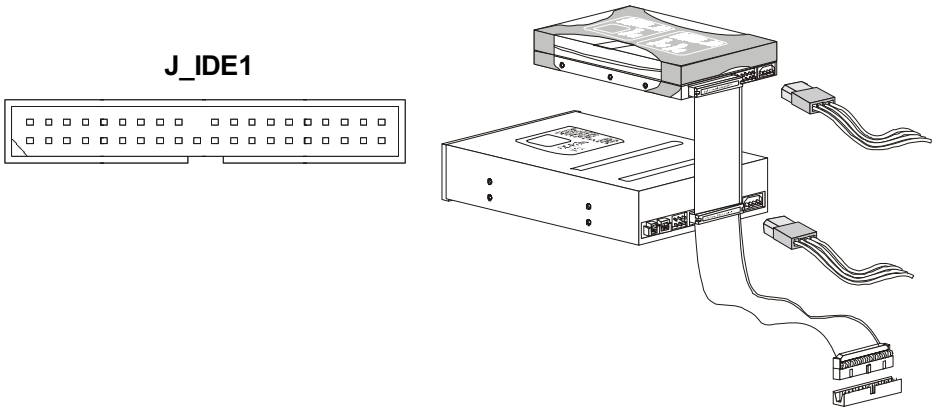
Floppy Disk Drive Connector: FDD1

This connector supports 360KB, 720KB, 1.2MB, 1.44MB or 2.88MB floppy disk drive.



IDE Connector: J_IDE1

This connector supports IDE hard disk drives, optical disk drives and other IDE devices.



Important

If you install two IDE devices on the same cable, you must configure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

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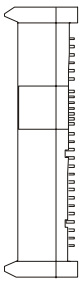
SAS Connector: D_SATA1, D_SATA2

These connectors are designed to connect **Serial ATA** devices only.

SAS LED Connector: D_SATALED1, D_SATALED2

These connectors are used to connect external LEDs to show the status of the SATA HDDs attached to the D_SATA1 & D_SATA2. The D_SATALED1 is intended for the D_SATA1 and the D_SATALED2 is made for the D_SATA2. When a SATA HDD is attached to the SAS connector, the LED connecting pin 1 & 2 will glow. When HDD activity/access is detected, the LED connecting pin 3 & 4 will blink.

D_SATA1,
D_SATA2



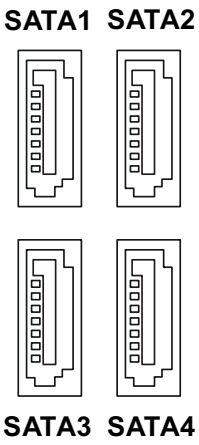
D_SATALED1,
D_SATALED2

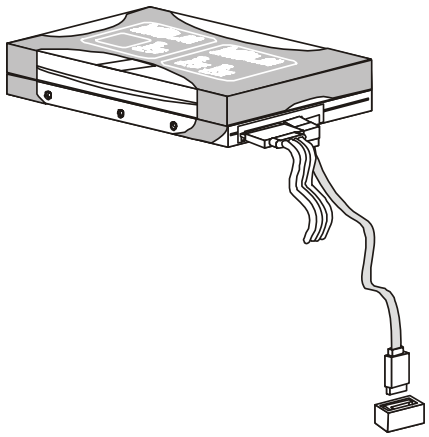
Pin Definition

PIN	SIGNAL
1	+3.3V
2	GND
3	+3.3V
4	SATARead

Serial ATA Connector: SATA1 ~ SATA4

This connector is a high-speed Serial ATA interface port. Each connector can connect to one Serial ATA device.





Important

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

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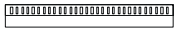
DVD/CDROM Connector: FPC1 (Optional)

This connector is designed to connect slim DVD/CD-ROM drive.



FPC1

Chassis Intrusion Switch Connector: JINT1

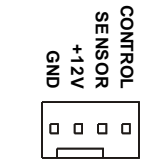
This connector connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

JINT1

Fan Power Connector:

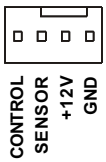
CPU_FAN1, SYS_FAN1/2, FRONT_FAN1, REAR_FAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset onboard, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



CPU_FAN1,
SYS_FAN1,
FRONT_FAN1

SYS_FAN2,
REAR_FAN1



Important

1. *Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.*
2. *Users are suggested to enter the BIOS Setup Utility to set up the Smart Fan Control function.*

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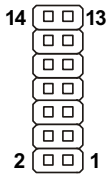
Front Panel Connector: JAPP1, JAPP2, JAPP3 (Optional)

These are proprietary front panel connectors that provide I²C bus connection, serial signal connection, and electrical connection to the front panel switches/LEDs.

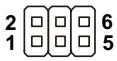
JAPP1



JAPP1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	+5VSB	2	GND
3	RESET+	4	GND
5	POWER+	6	GND
7	COM2 RXD	8	GND
9	COM2 TXD	10	NC
11	ATX PWR OK	12	GND
13	ID_LED+	14	ID_LED-

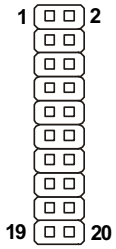
JAPP2



JAPP2 Pin Definition

PIN	SIGNAL
1	+5VSB
2	GND
3	I²C_DATA
4	ID_LED+
5	I²C_CLK
6	ID_LED-

JAPP3



JAPP3 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	Power LED +	2	SYS_LED +
3	Power LED -	4	SYS_LED -
5	Power Button +	6	LAN1_LED +
7	Power Button -	8	LAN1_LED -
9	ID LED +	10	LAN2_LED +
11	ID LED -	12	LAN2_LED -
13	ID Button +	14	Reset +
15	ID Button -	16	Reset -
17	HDD LED +	18	HDD LED -
19	+5VSB	20	+5VSB

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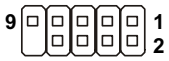
Serial Port Connector: COM2

This connector is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial device to it.

COM2



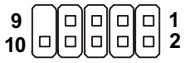
Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

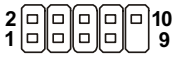
Front USB Connector: JUSB2, JUSB3, JUSB4

This connector, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.

JUSB2/3



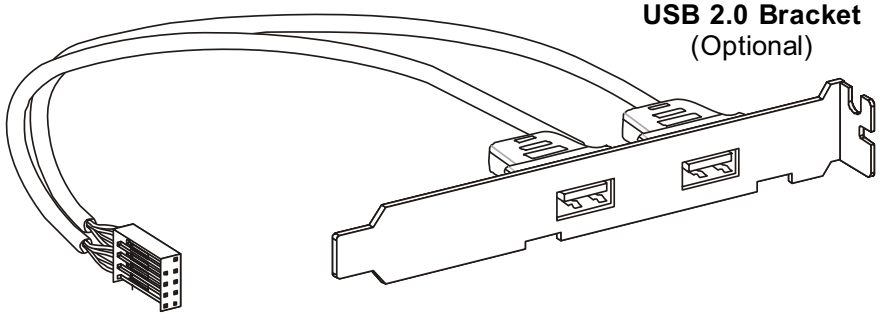
JUSB4



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

USB 2.0 Bracket
(Optional)



Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

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SPI Flash ROM Connector: JSPI1

This connector is used to flash SPI flash ROM.

JSPI1

Pin Definition

Pin	Description	Pin	Description
1	VCC3_SB	2	VCC3_SB
3	SPI_MISO_F	4	SPI_MOSI_F
5	SPI_CS0_F#	6	SPI_CLK_F
7	GND	8	GND
9	SPI_HOLD#	10	NC

BMC Connector: J_BOOT1, J_BOOT2, J_IPMB1, J_ICMB1, J1

These connectors are used to control the H8 BMC (Baseboard Management Controller).

J_BOOT1

Pin Definition

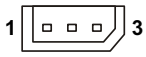
PIN	SIGNAL
1	BOOT_TXD_CON
2	BOOT_RXD_CON
3	GND

J_BOOT2

Pin Definition

PIN	SIGNAL
1	BootMode
2	GND

J_IPMB1



Pin Definition

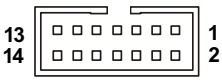
PIN	SIGNAL
1	IPMB_DATA
2	GND
3	IPMB_CLK

J_ICMB1

Pin Definition

PIN	SIGNAL
1	BMC_RXD0
2	BMC_TXD0
3	ICMB_EN

J1



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	ETCK	2	GND
3	ETRST#	4	GND
5	ETDO	6	GND
7	H2C_RES#	8	3.3V DUAL
9	ETMS	10	GND
11	ETDI	12	GND
13	H8_RESET#	14	GND

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I2C Bus Connector: J_SMBUS1

The mainboard provides one I2C (also known as I^2C) Bus connector for users to connect System Management Bus (SMBus) interface.

J_SMBUS1

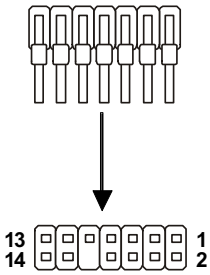
Pin Definition

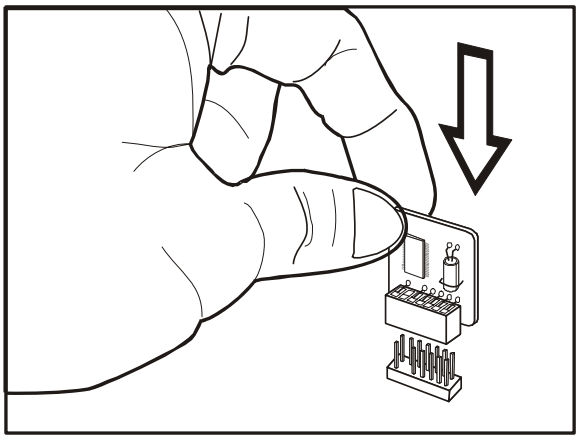
PIN	SIGNAL
1	SMB_ICH_ALERT#
2	SMB_ICH_CLK
3	SMB_ICH_DATA

TPM Connector: JTPM1 (Optional)

This connector connects to an optional TPM (Trusted Platform Module). Please refer to the TPM security platform manual for more details.

JTPM1





PIN	SIGNAL	DESCRIPTION	PIN	SIGNAL	DESCRIPTION
1	LCLK	LPC clock	2	3V dual/3V_STB	3V dual or 3V standby power
3	LRST#	LPC reset	4	VCC3	3.3V power
5	LAD0	LPC address & data pin0	6	SIRQ	Serial IRQ
7	LAD1	LPC address & data pin1	8	VCC5	5V power
9	LAD2	LPC address & data pin2	10	KEY	No pin
11	LAD3	LPC address & data pin3	12	GND	Ground
13	LFRAME#	LPC Frame	14	GND	Ground

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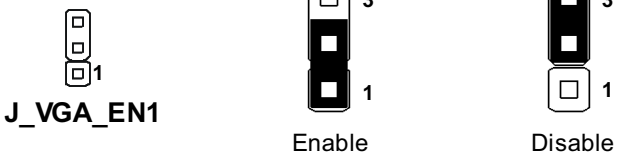
Jumper

VGA Jumper: J_VGA_EN1

This jumper is used to enable or disable the onboard VGA controller.



BIOS Recovery Jumper: J_BOOT3

Users can short connect pin#2-3 to recover the system BIOS with a Recovery Floppy. When the system is done with the job, the buzzer will beep to remind the user to set the jumper to its normal state (pin#1-2 short connected).

Clear CMOS Jumper: J_CMOS1

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the jumper to clear data.

Important

You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

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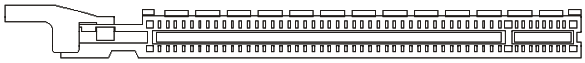
Slot

PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports the PCI Express interface expansion card.
The standard PCI Express x16 slot supports up to 4.0 GB/s transfer rate.
But the onboard PCI Express x16 slot only supports x8 signal with up to 2.0 GB/s transfer rate.



PCI Express x16 Slot

Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

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PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

DEVICE	Interrupt	ID Select	REQ / GNT
XGI Z7	PCI_PIRQ # 0	PCI_AD18	
IT8213F	PCI_PIRQ # 2	PCI_AD19	PCI_REQ# 2 / PCI_GNT# 2
PCI Slot 1	PCI_PIRQ # 0 PCI_PIRQ # 1 PCI_PIRQ # 2 PCI_PIRQ # 3	PCI_AD20	PCI_REQ# 0 / PCI_GNT# 0
PCI Slot 2	PCI_PIRQ # 3 PCI_PIRQ # 0 PCI_PIRQ # 1 PCI_PIRQ # 2	PCI_AD21	PCI_REQ# 1 / PCI_GNT# 1
PCI Slot 3	PCI_PIRQ # 2 PCI_PIRQ # 3 PCI_PIRQ # 0 PCI_PIRQ # 1	PCI_AD22	PCI_REQ# 3 / PCI_GNT# 3 or ARBITER_REQ# 1 ARBITER_GNT# 1
PCI Slot 4	PCI_PIRQ # 1 PCI_PIRQ # 2 PCI_PIRQ # 3 PCI_PIRQ # 0	PCI_AD23	ARBITER_REQ# 2 & ARBITER_GNT# 2

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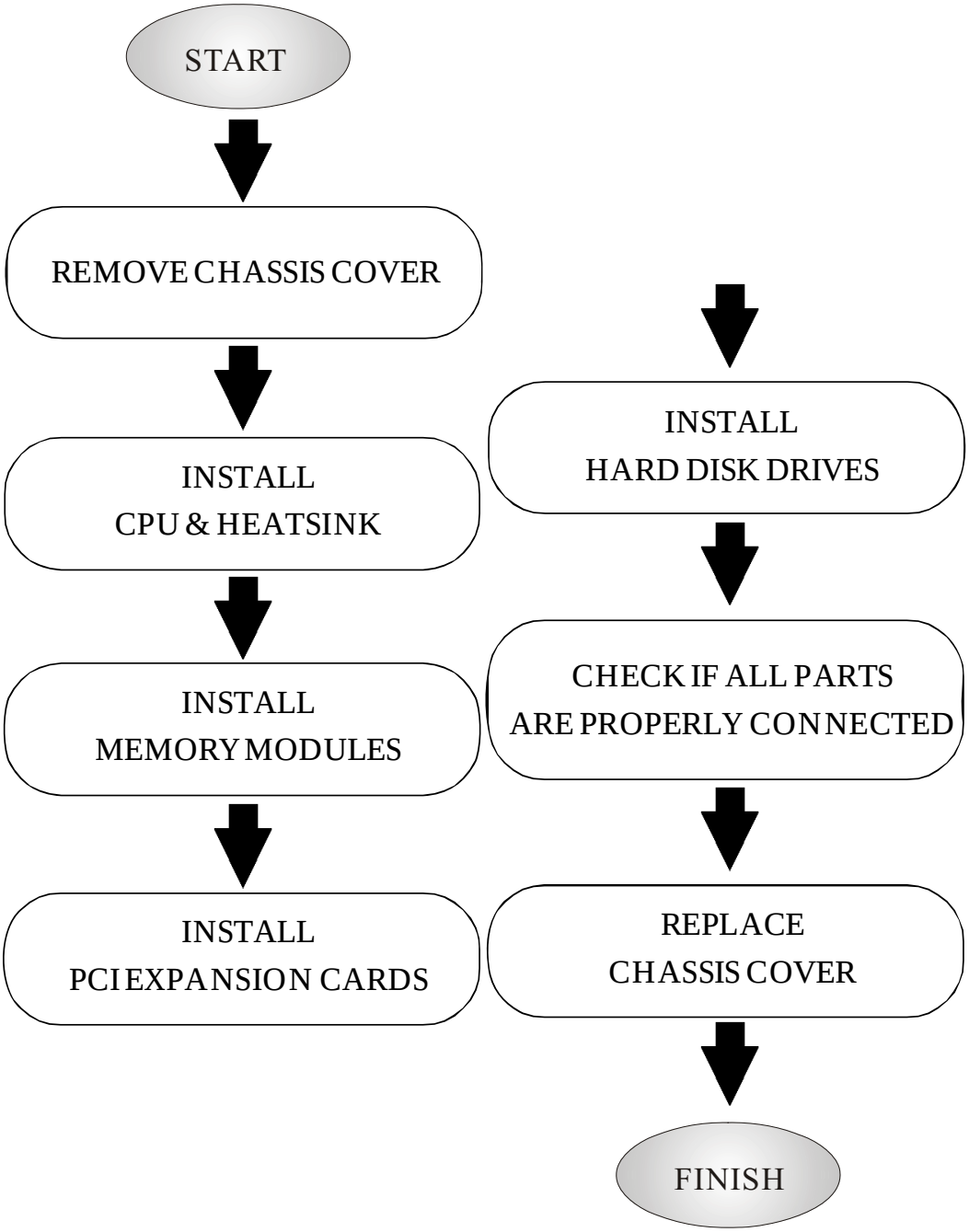
System Assembly Flowchart

The following flowchart shows basic system assembly procedures. Please note that always wear anti-static gloves when handling electrical components and exercise caution during the installation process. For more information, contact your local dealer or experienced technician.



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System Assembly

Chassis Cover

1. Unscrew the chassis cover.

2. Press the release button and slide the chassis cover backwards to remove it from the chassis.

3. Lift the chassis cover up to remove it from the chassis.
4. Follow the above procedures in reverse order to replace the chassis cover if necessary.

Important

Before you remove or install any components, make sure the server is not turned on or connected to the AC power.

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System Assembly

CPU, Heatsink, and Fan Duct

1. On top of the CPU is a fan duct designed to enhance heat dissipation of the CPU. Remove the fan duct before installing the CPU.

2. Locate the CPU socket. The CPU socket has a plastic cap on it to protect the contact from damage. Before installing the CPU, always cover it to protect the socket pins.
3. Remove the plastic cap from the load plate. The pins of the socket reveal.

4. Raise the load lever up to its full extent.

5. Open the load plate.

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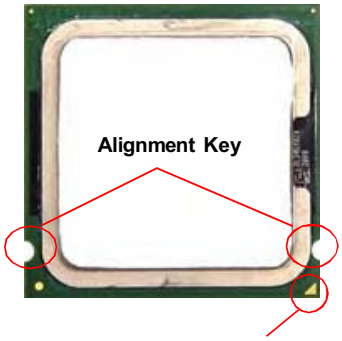
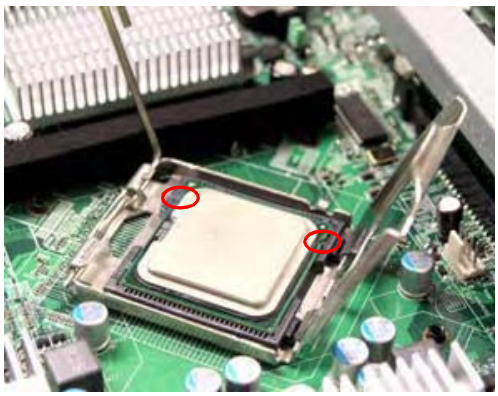
System Assembly

6. After confirming the CPU direction (indicated below with red circles) for correct mating, put down the CPU in the socket housing frame. Note that the alignment keys are matched.
7. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.

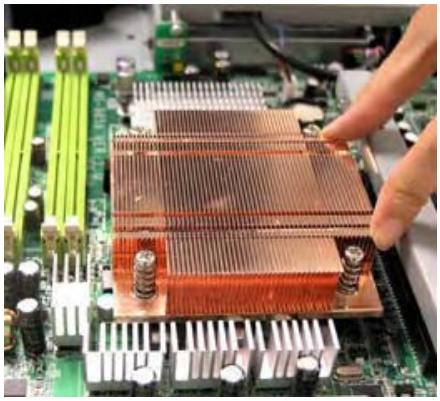


Yellow triangle is the Pin 1 indicator



8. Cover the load plate onto the package.
9. Press down the load lever lightly onto the load plate and then secure the lever with the hook under the retention tab.

10. Place the heatsink on top of the CPU and secure the screws on both sides.



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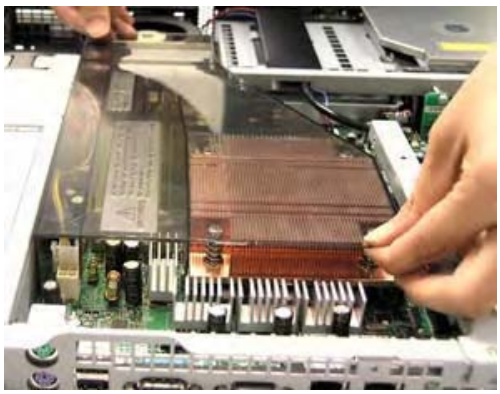
System Assembly

Memory

1. Locate the DIMM slots on the mainboard. Flip open the retaining clip at each side of the DIMM slot.
2. Align the notch on the DIMM with the break on the slot. Insert the DIMM vertically into the DIMM slot. Then push it in until the golden finger on the DIMM is deeply inserted in the DIMM slot. The retaining clip at each side of the DIMM slot will automatically close.

3. Follow the same procedures to install more memory modules if necessary.

4. Replace the fan duct on top of the heatsink and the memory DIMMs.



Note: To ensure proper cooling, make sure the heatsink & the fan duct are properly installed.

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Dual-Channel Mode Population Rule

In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Dual-Channel mode is enabled when the installed memory capacities of both DIMM channels are equal. If different speed DIMMs are used between channels, the slowest memory timing will be used.

Dual-Channel mode can be achieved with two, three or four DIMMs. To achieve Dual-Channel mode, the following conditions must be met:

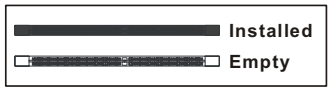
* Matched DIMM configuration in each channel
* Same Density (128MB, 256MB, 512MB, etc.)
* Matched in both Channel A and Channel B memory channels
* Populate symmetrical memory slots (Slot 1 or Slot 2)

Configurations that do not match the above conditions will revert to Single-Channel mode.

2 DIMMs

3 DIMMs

4 DIMMs



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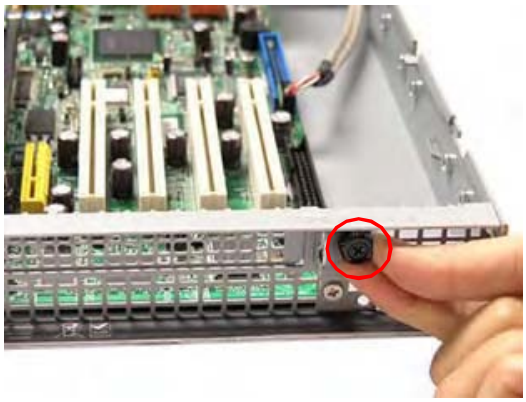
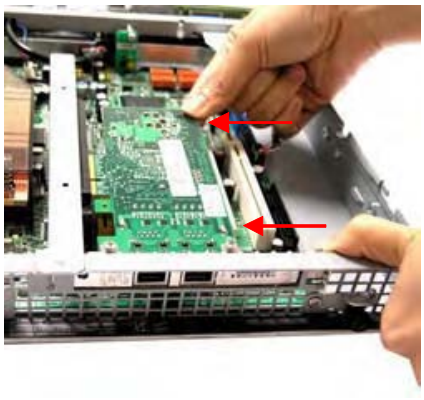
PCI Express expansion slot / card

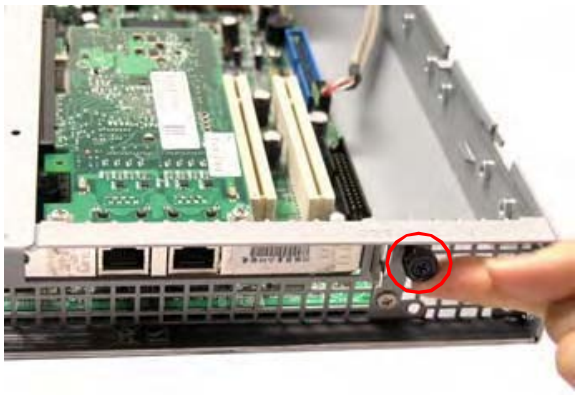
1. Locate the expansion card bracket holder and unscrew the cover plate.



2. Remove the cover plate and put it aside for later use.
3. Insert the expansion card into the intended slot on the riser card.



4. Screw to secure the expansion card bracket.



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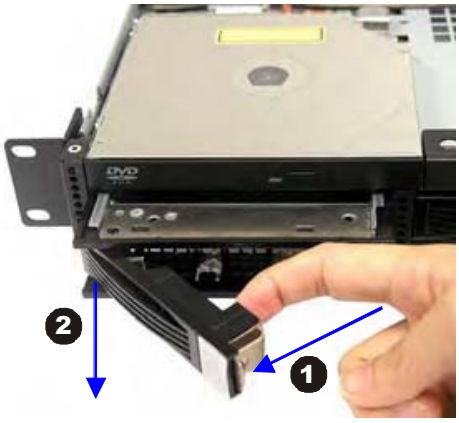
Hard Disk Drive

1. To release the hot-swapping HDD tray, first press the release button.

2. Pull the tray lever outwards and gently pull the tray out of the bay.



3. Unscrew and remove the HDD tray.

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4. Install the HDD and secure it with four screws supplied by the HDD vendor.

5. Insert the HDD tray into the bay and push it backwards until it hits the end. If the HDD tray is correctly installed, the adapter at the rear should get connected to the onboard SAS connector (see page 2-9).
6. Push the tray lever back in place.

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Slim DVD /CDROM Drive

1. Take out your slim DVD/CDROM drive and the caddy kit (mounting frames and adapter).

2. Screw the mounting frames to the sides of the DVD drive as shown below.

3. Screw the adapter to the rear of the DVD drive.

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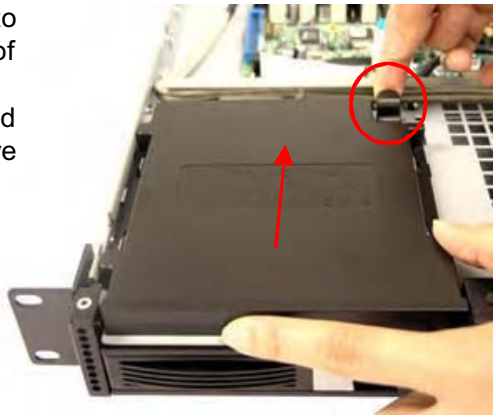
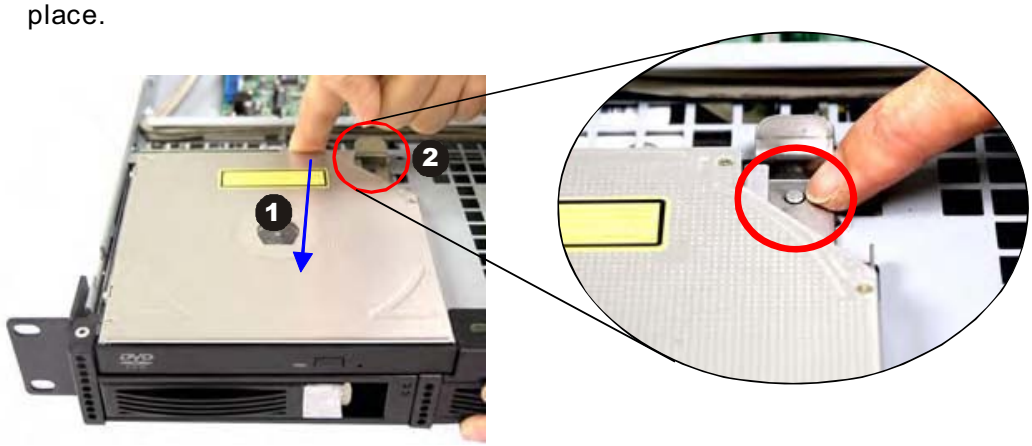
4. To install the slim DVD drive, users have to at first remove the dummy tray on top of the HDD drives.
5. Simultaneously pull up the locking tab and push the dummy tray backwards to remove it from the chassis.



6. Align the mounting frames of the DVD drive with the locking tabs on the chassis.
7. Mount the slim DVD drive onto the chassis.

8. Push the DVD drive forwards. The mounting frames of the DVD drive should get locked by the chassis locking tabs.
9. Check the locking tab at the rear to make sure the DVD drive has been secured in place.



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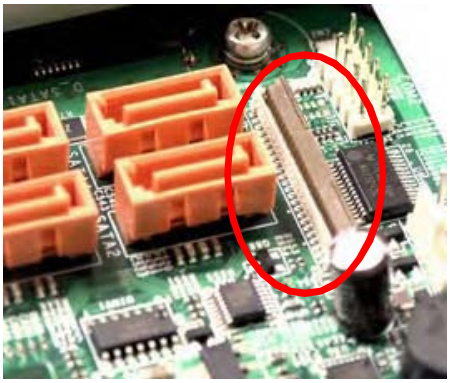
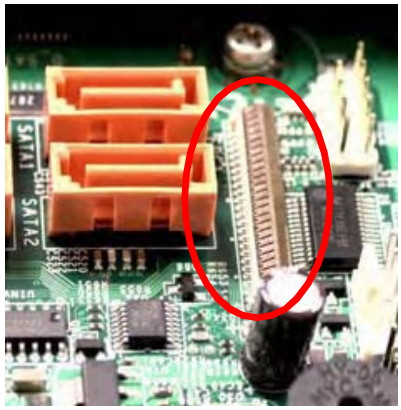
10. Locate the FPC socket on the mainboard.

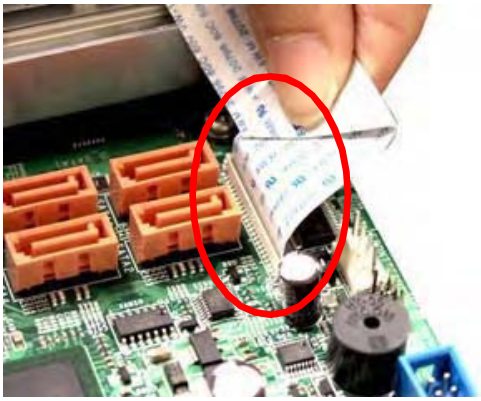


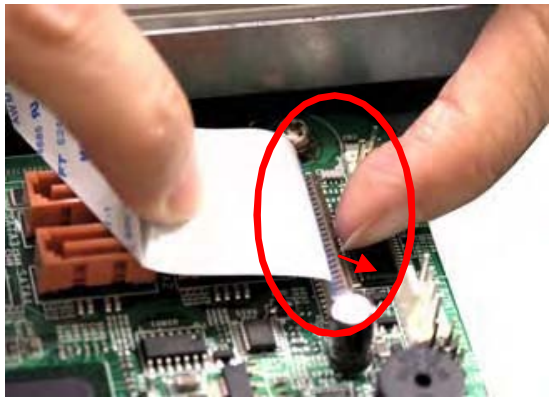
The flip lock of the FPC socket is in **UNLOCK** state when flipped **inwards**.



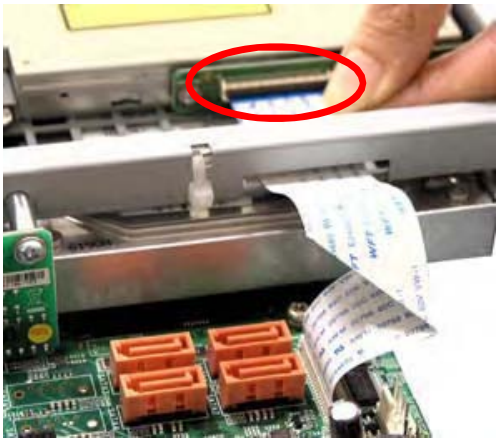
The flip lock of the FPC socket is in **LOCK** state when flipped **outwards**.

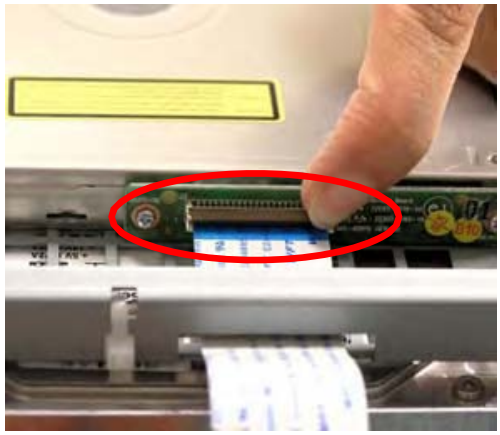
11. Flip the flip lock inwards to unlock the socket.
12. Insert the FPC cable into the socket (with the blank side of the cable facing down.)
13. Flip the flip lock outwards to lock the FPC cable in place.





14. The DVD drive adapter has one identical FPC socket. Follow the above procedures to connect the other end of the FPC cable to the DVD drive adapter.
15. Make sure that the flip lock has been flipped outwards to lock the FPC cable in place.





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Rack Mounting

Rail Set

1. The rail set includes two rails and two L-shaped brackets.

2. Fasten 4 screws (2 on each side) to attach the rails onto the chassis.

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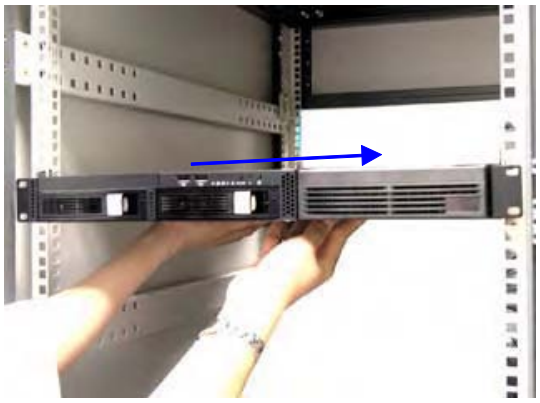
Rack Mounting

Rack Mounting

1. Mount the system onto the rack.
2. Hold the system firmly and screw to secure the system to the rack.

Note: *Make sure that you hold the system firmly while screwing the system to the rack.*



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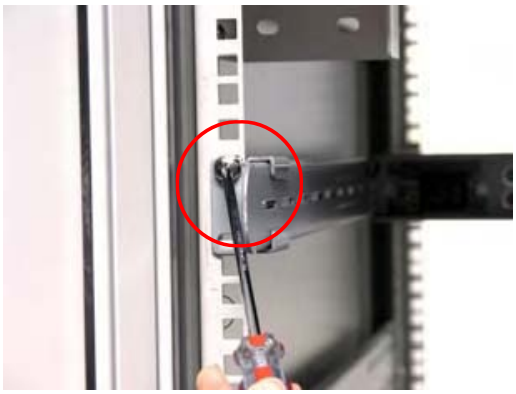
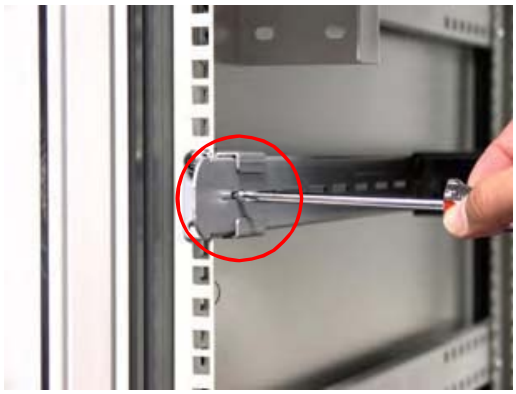
Rack Mounting

3. Mount the L-shaped bracket onto the rail.

4. Screw the L-shaped bracket to the rack.
5. Screw the L-shaped bracket to the rail.





6. Follow the above procedures in reverse order to dismount the system from the rack if necessary.

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Chapter 3
BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.
You may need to run the Setup program when:

An error message appears on the screen during the system booting up, and requests you to run SETUP.

You want to change the default settings for customized features.

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Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <Del> key to enter Setup.

Press Del to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
2. *Upon boot-up, the 1st line appearing after the memory count is the BIOS version.*

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Entering Setup

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F8>	Load Optimized Defaults
<F9>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

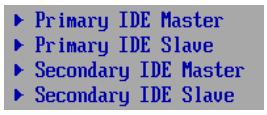
Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu



If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

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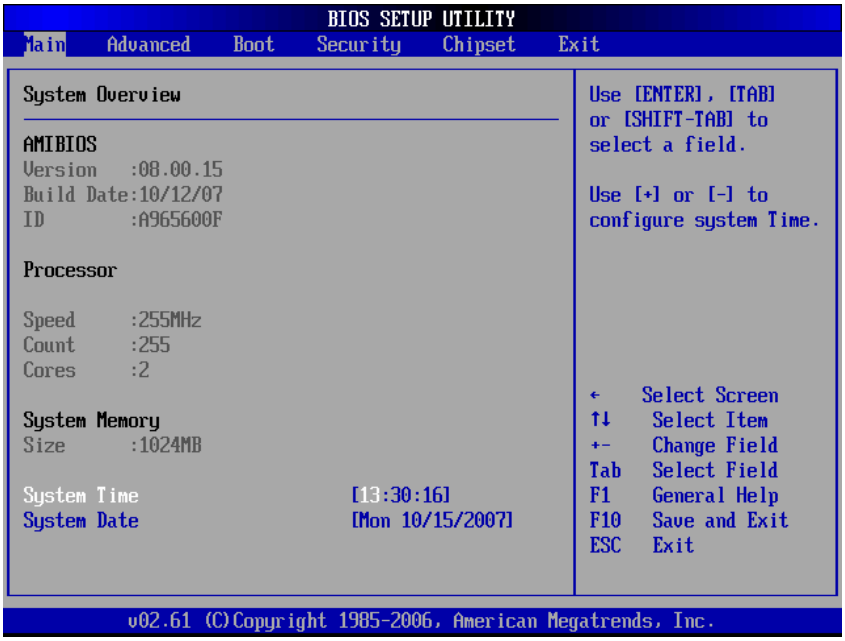
The Menu Bar



▶ Main
Use this menu for basic system configurations, such as time, date etc.

▶ Advanced
Use this menu to set up the items of special enhanced features.

▶ Boot
Use this menu to specify the priority of boot devices.

▶ Security
Use this menu to set supervisor and user passwords.

▶ Chipset
This menu controls the advanced features of the onboard Northbridge and Southbridge.

▶ Exit
This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

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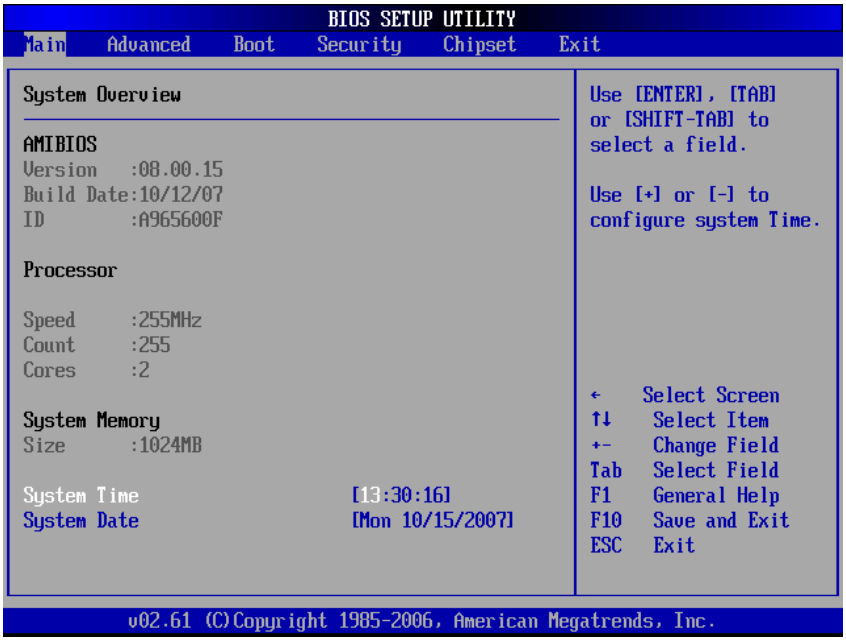
Main



▶ AMI BIOS, Processor, System Memory
These items show the firmware and hardware specifications of your system. Read only.

▶ System Time
This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

▶ System Date
This setting allows you to set the system date. The date format is <Day>, <Month> <Date> <Year>.

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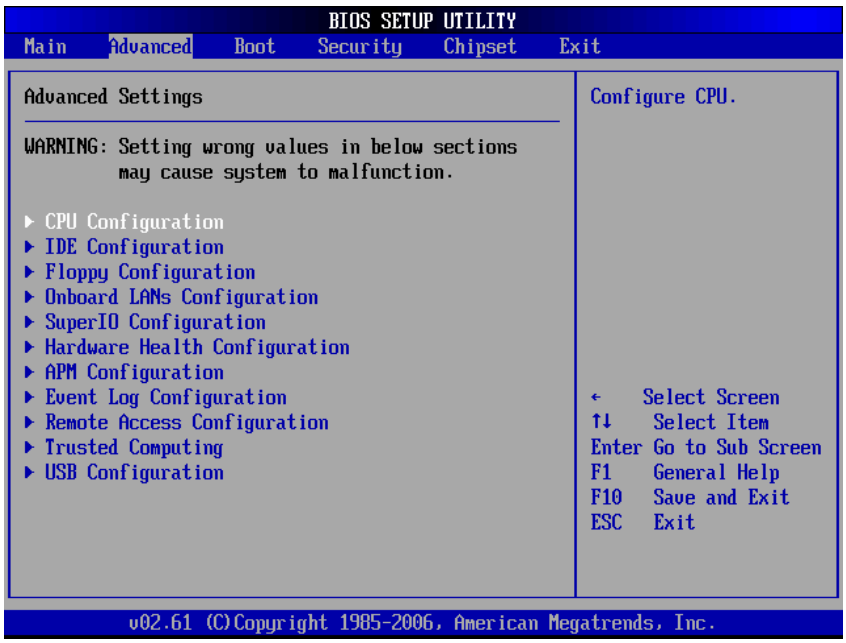
Advanced

► For mainboards



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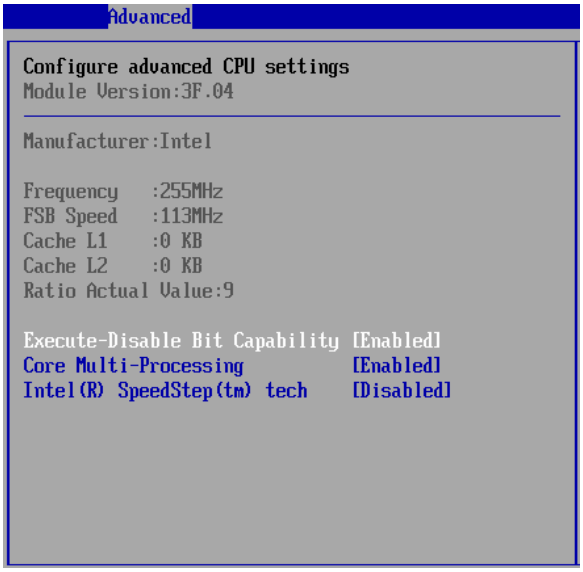
Advanced

▶ CPU Configuration



▶ Execute Disable Bit Capability

Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

▶ Core Multi-Processing

CMP (Core Multi Processing) is the ability to have many independent processing cores on a single die, each with their own L1 Code & Data caches, Local APICs & thermal controls, while having a shared L2 cache, power management & bus interface. Intel multi-core architecture has a single Intel processor package that contains two or more processor "execution cores," or computational engines to enable enhanced performance and more-efficient simultaneous processing of multiple tasks.

▶ Intel(R) SpeedStep(tm) Tech

EIST (Enhanced Intel SpeedStep Technology) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production.

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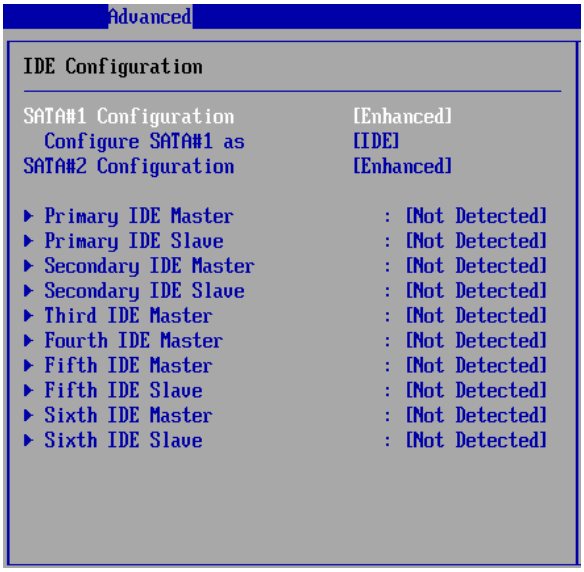
Advanced

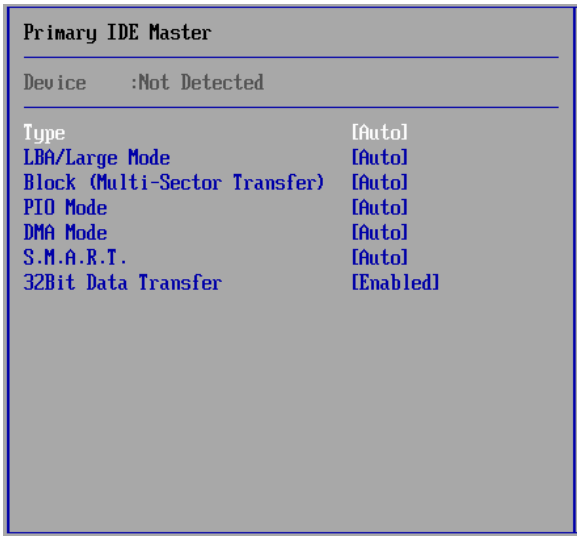
▶ IDE Configuration


Advanced
IDE Configuration
SATA#1 Configuration [Enhanced]
Configure SATA#1 as [IDE]
SATA#2 Configuration [Enhanced]
Primary IDE Master : [Not Detected]
Primary IDE Slave : [Not Detected]
Secondary IDE Master : [Not Detected]
Secondary IDE Slave : [Not Detected]
Third IDE Master : [Not Detected]
Fourth IDE Master : [Not Detected]
Fifth IDE Master : [Not Detected]
Fifth IDE Slave : [Not Detected]
Sixth IDE Master : [Not Detected]
Sixth IDE Slave : [Not Detected]

▶ SATA#1 Configuration, SATA#2 Configuration
These settings specify the operation modes of the SATA ports.

▶ Configure SATA#1 as
This setting specifies the function of the on-chip SATA controller.

▶ Primary/Secondary/Third/Fourth/Fifth/Sixth IDE Master/Slave



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[Type]	Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.
[LBA/Large Mode]	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads and Sectors
[Block(Multi-Sector Transfer)]	Any selection except Disabled determines the number of sectors transferred per block
[PIO Mode]	Indicates the type of PIO (Programmed Input/ Output)
[DMA Mode]	Indicates the type of Ultra DMA
[S.M.A.R.T.]	This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S. M.A.R.T is a utility that monitors your disk sta tus to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline.
[32 Bit Data Transfer]	Enables 32-bit communication between CPU and IDE card

▶ Floppy Configuration

▶ Floppy A, Floppy B

This setting allows you to set the type of floppy drives installed.

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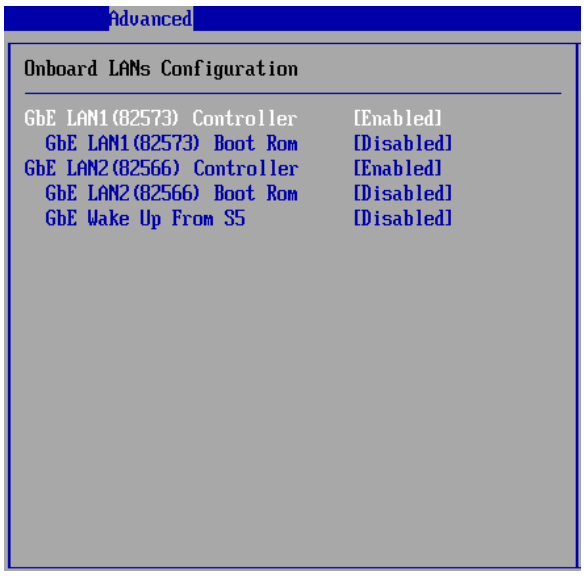
Advanced

▶ Onboard LANs Configuration


Advanced
Onboard LANs Configuration
GbE LAN1(82573) Controller [Enabled]
GbE LAN1(82573) Boot Rom [Disabled]
GbE LAN2(82566) Controller [Enabled]
GbE LAN2(82566) Boot Rom [Disabled]
GbE Wake Up From S5 [Disabled]

▶ GbE LAN1 (82573) Controller, GbE LAN2 (82566) Controller
These settings disable/enable the specified LAN controllers.

▶ GbE LAN1 (82573) Boot ROM, GbE LAN2 (82566) Boot ROM
The items enable or disable the initialization of the onboard LAN Boot ROMs during bootup. Selecting [Disabled] will speed up the boot process.

▶ GbE Wake Up From S5
This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard LAN is detected.

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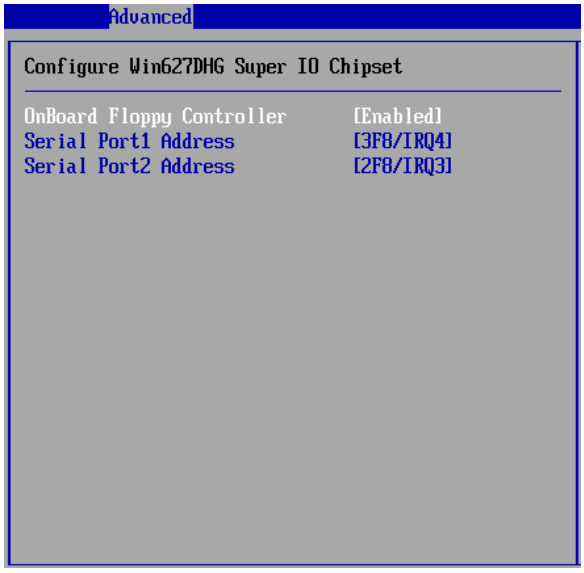
Advanced

▶ Super IO Configuration



▶ Onboard Floppy Controller
This setting disables/enables the onboard floppy disk drive controller.

▶ Serial Port 1 Address, Serial Port 2 Address
Select an address and a corresponding interrupt for the serial port 1/2.

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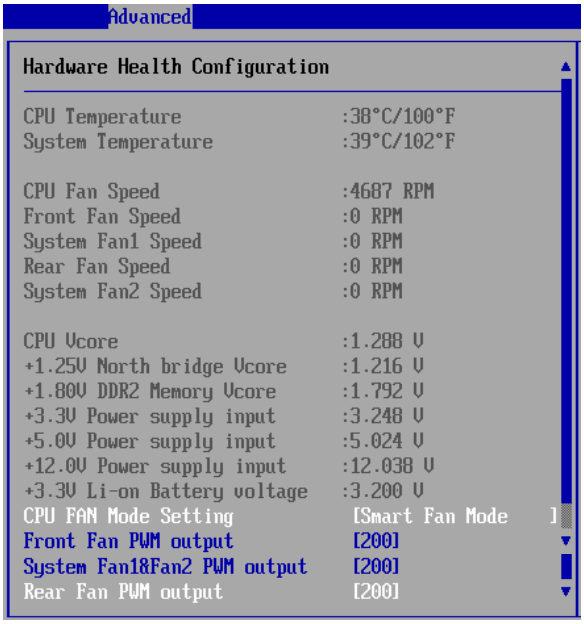
Advanced

▶ Hardware Health Configuration ***(for mainboards without IPMI chip)***
These items display the current status of all of the monitored hardware devices/ components such as voltages, temperatures and all fans' speeds.


Advanced
Hardware Health Configuration
CPU Temperature :38°C/100°F
System Temperature :39°C/102°F
CPU Fan Speed :4687 RPM
Front Fan Speed :0 RPM
System Fan1 Speed :0 RPM
Rear Fan Speed :0 RPM
System Fan2 Speed :0 RPM
CPU Vcore :1.288 V
+1.25V North bridge Vcore :1.216 V
+1.80V DDR2 Memory Vcore :1.792 V
+3.3V Power supply input :3.248 V
+5.0V Power supply input :5.024 V
+12.0V Power supply input :12.038 V
+3.3V Li-on Battery voltage :3.200 V
CPU FAN Mode Setting [Smart Fan Mode]
Front Fan PWM output [200]
System Fan1&Fan2 PWM output [200]
Rear Fan PWM output [200]

▶ CPU FAN Mode Setting
This setting controls the Smart Fan feature. Smart Fan is an excellent feature which will adjust the CPU/system fan speed automatically depending on the current CPU/system temperature. Selecting [Smart Fan Mode] can prevent the CPU from being damaged by overheating.

▶ Front Fan PWM Output, System Fan1 & Fan2 PWM Output, Rear Fan PWM Output
This setting allows users to control the fan speed by changing the duty cycle of the fan PWM (Pulse-Width Modulation) output.

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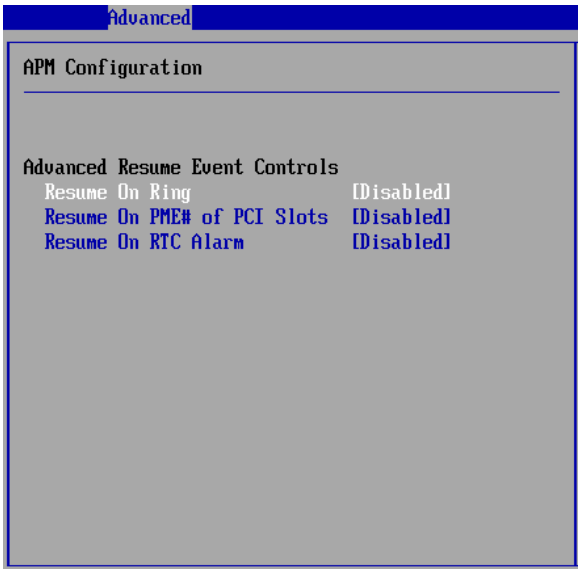
Advanced

▶ APM Configuration



▶ Resume On Ring
An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

▶ Resume On PME# of PCI Slots
When setting to [Enabled], this setting allows your system to be awakened from the power saving modes through any PME (Power Management Event) on PCI slots.

▶ Resume On RTC Alarm
When [Enabled], your can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

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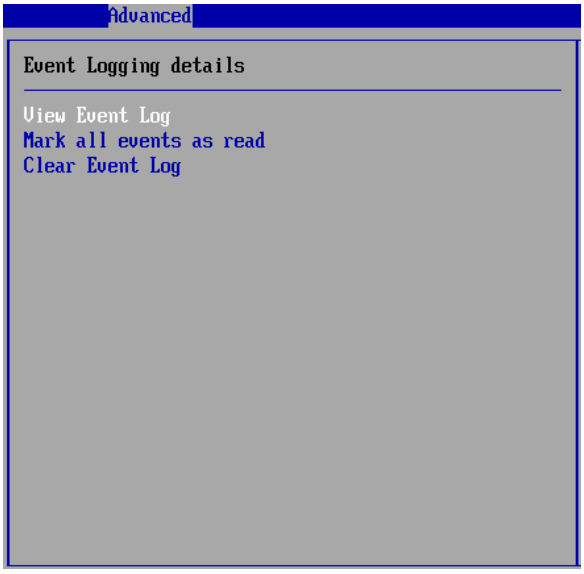
Advanced

▶ Event Log Configuration



▶ View Event Log
Press [Enter] to view the contents of the DMI event log.

▶ Mark All Events as Read
Press [Enter] and a screen pops up, asking users to confirm whether or not to clear all DMI event logs immediately. Press [Y] and [Enter], the BIOS will clear all DMI event logs right away.

▶ Clear Event Log
When this setting is set to [Yes], the DMI event log will be cleared at next POST stage. Then, the BIOS will automatically set this option to [No].

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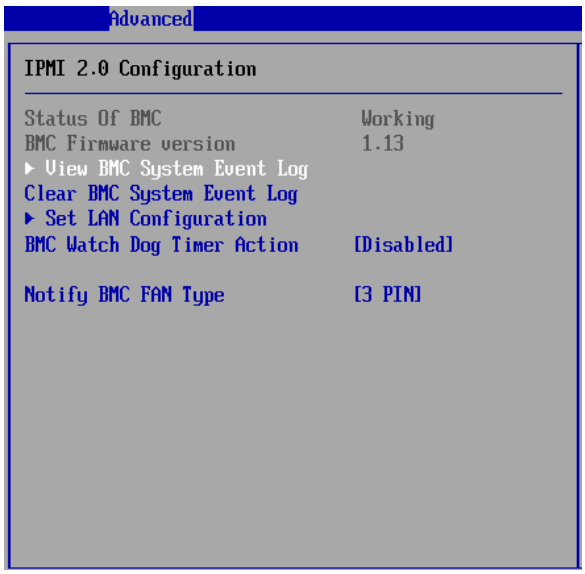
Advanced

▶ IPMI 2.0 Configuration *(for mainboards with IPMI chip)*

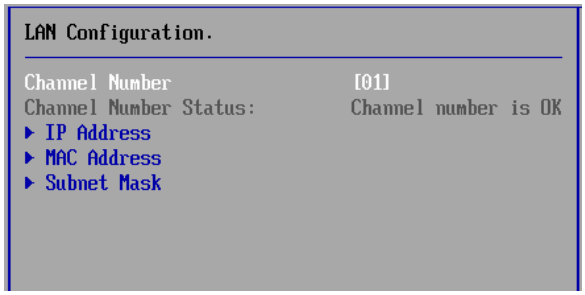


▶ Status of BMC, BMC Firmware Version
These settings show the status of the BMC (Baseboard Management Controller) chip and its firmware version. Read only.

▶ View BMC System Event Log
Use this function to view system event logs recorded by BMC.

▶ Clear BMC System Event Log
Use this function to clear system event logs recorded by BMC.

▶ Set LAN Configuration



▶ Channel Number, IP Address, MAC Address, Subnet Mask
Use these settings to set up the channel number, IP address, MAC address, and IP subnet mask for your system network.

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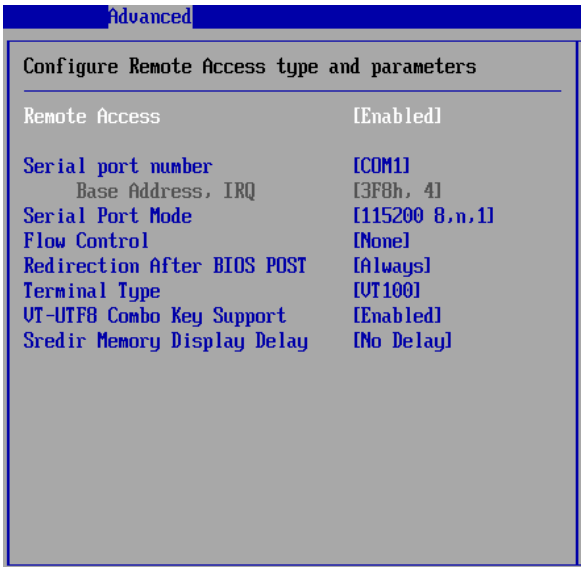
Advanced

▶ BMC Watch Dog Timer Action
The system watch-dog timer is a hardware timer that generates either an NMI or a reset when the software that it monitors does not respond as expected each time the watch dog polls it.

▶ Notify BMC FAN Type
This setting specifies the BMC fan type.

▶ Remote Access Configuration


Advanced
Configure Remote Access type and parameters
Remote Access [Enabled]
Serial port number [COM1]
Base Address, IRQ [3F8h, 4]
Serial Port Mode [115200 8,n,1]
Flow Control [None]
Redirection After BIOS POST [Always]
Terminal Type [VT100]
VT-UTF8 Combo Key Support [Enabled]
Sredir Memory Display Delay [No Delay]

▶ Remote Access
The setting enables/disables the remote access function. When set to [Enabled], users may configure the following settings for remote access type and parameters.

▶ Serial Port Number, Base Address, IRQ, Serial Port Mode
Use these settings to configure ports for remote access.

▶ Flow Control
Flow control is the process of managing the rate of data transmission between two nodes. It's the process of adjusting the flow of data from one device to another to ensure that the receiving device can handle all of the incoming data. This is particularly important where the sending device is capable of sending data much faster than the receiving device can receive it.

▶ Redirection After BIOS POST
This setting determines whether or not to keep terminals' console redirection running after the BIOS POST has booted.

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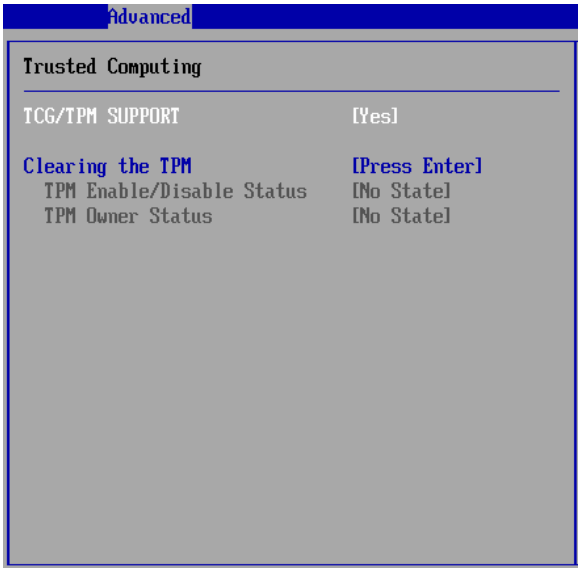
Advanced

▶ Terminal Type
To operate the system's console redirection, you need a terminal supporting ANSI terminal protocol and a RS-232 null modem cable connected between the host system and terminal(s). This setting specifies the type of terminal device for console redirection.

▶ VT-UTF8 Combo Key Support
This setting enables/disables the VT-UTF8 combination key support for ANSI/ VT100 terminals.

▶ Sredir Memory Display Delay
Use this setting to set the delay in seconds to display memory information.

▶ Trusted Computing



▶ TCG/TPM Support
This setting controls the Trusted Platform Module (TPM) designed by the Trusted Computing Group (TCG). TPMs are special-purpose integrated circuits (ICs) built into a variety of platforms to enable strong user authentication and machine attestation—essential to prevent inappropriate access to confidential and sensitive information and to protect against *compromised networks.* TPM Services is now a new feature set in Windows Server "Longhorn" and Windows Vista.

▶ Clearing the TPM
When the TPM is cleared, all the keys you previously had stored on your vault will be lost. You should create an archive of your TPM Keys before clearing the TPM. To recover your TPM keys, you will need to restore your keys from an archive.

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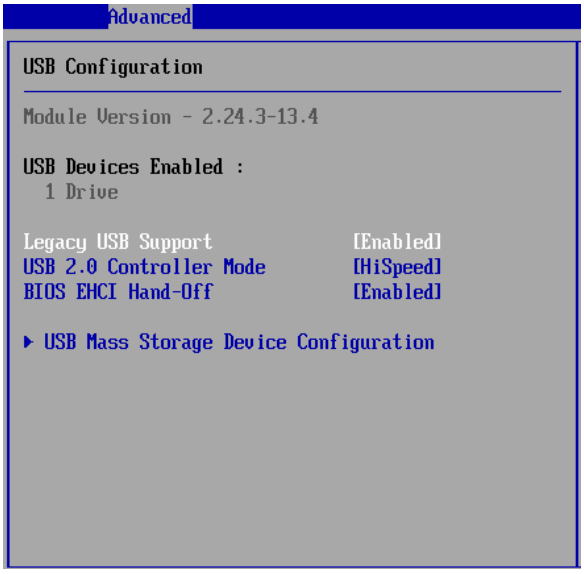
Advanced

▶ **TPM Enable/Disable Status**
This setting displays the TPM enable/disable status. Read only.

▶ **TPM Owner Status**
This setting shows the TPM ownership. Read only.

▶ **USB Configuration**



▶ **Legacy USB Support**
Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix.

▶ **USB 2.0 Controller Mode**
This setting specifies the operation mode of the onboard USB 2.0 controller.

▶ **BIOS EHCI Hand-Off**
This setting allows you to enable or disable a workaround for operating systems without EHCI (Enhanced Host Controller Interface) hand-off support. The Enhanced Host Controller Interface (EHCI) specification describes the register-level interface for a Host Controller for the Universal Serial Bus (USB) Revision 2.0.

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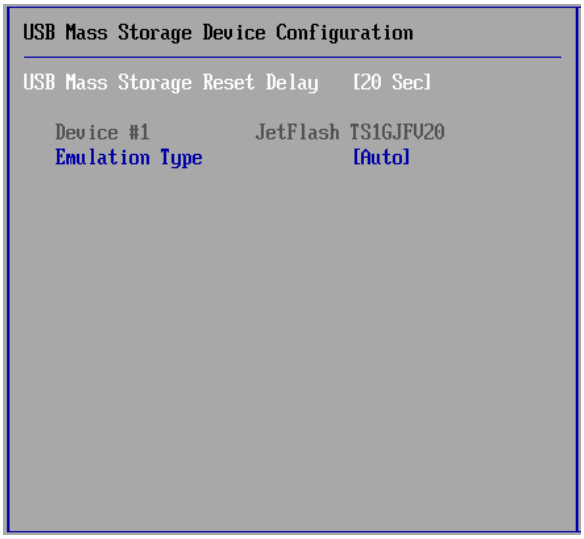
Advanced

▶ USB Mass Storage Device Configuration


USB Mass Storage Device Configuration
USB Mass Storage Reset Delay [20 Sec]
Device #1 JetFlash TS1GJFV20
Emulation Type [Auto]

▶ USB Mass Storage Reset Delay
This setting controls the number of seconds the POST waits for the USB mass storage device after the start unit command is sent.

▶ Emulation Type
This setting enables you to set the type of device you want the USB mass storage device to emulate.

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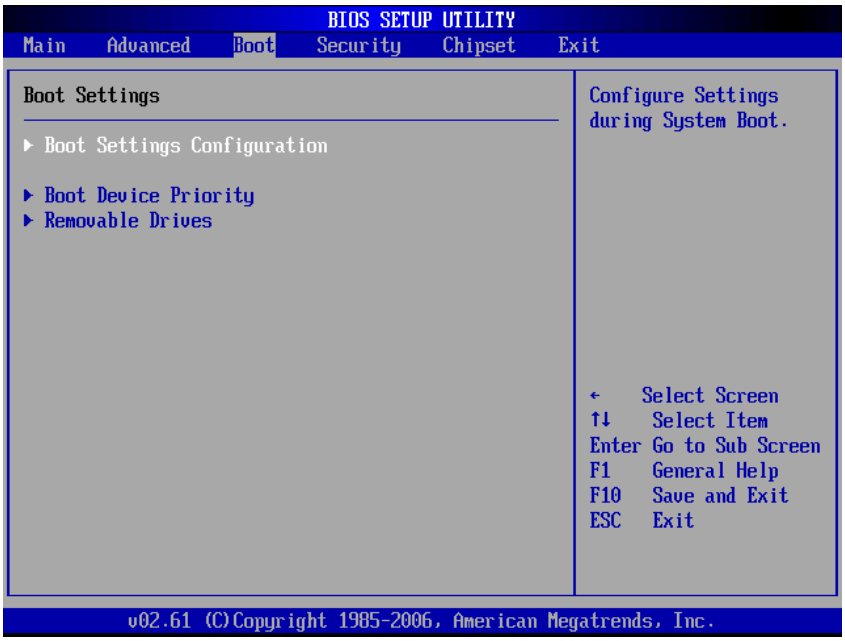
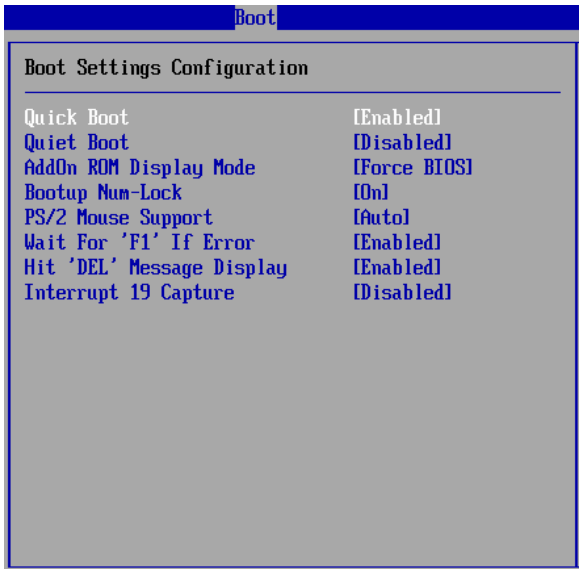
Boot



▶ Boot Settings Configuration



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Boot

▶ Quick Boot
Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

▶ Quiet Boot
This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo.
When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.
When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.
Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

▶ AddOn ROM Display Mode
This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.

▶ Bootup Num-Lock
This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

▶ PS/2 Mouse Support
Select [Enabled] if you need to use a PS/2-interfaced mouse in the operating system.

▶ Wait For 'F1' If Error
When this setting is set to [Enabled] and the boot sequence encounters an error, it asks you to press F1. If disabled, the system continues to boot without waiting for you to press any keys.

▶ Hit 'DEL' Message Display
Set this option to [Disabled] to prevent the message as follows:

Hit Del if you want to run setup

It will prevent the message from appearing on the first BIOS screen when the computer boots. Set it to [Enabled] when you want to run the BIOS Setup Utility.

▶ Interrupt 19 Capture
Interrupt 19 is the software interrupt that handles the boot disk function. When enabled, this BIOS feature allows the ROM BIOS of these host adaptors to "capture" Interrupt 19 during the boot process so that drives attached to these adaptors can function as bootable disks. In addition, it allows you to gain access to the host adaptor's ROM setup utility, if one is available.

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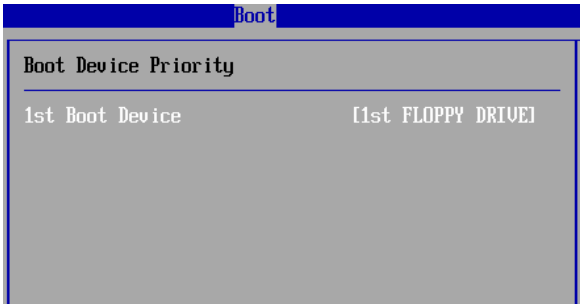
Boot

When disabled, the ROM BIOS of these host adaptors will not be able to "capture" Interrupt 19. Therefore, you will not be able to boot operating systems from any bootable disks attached to these host adaptors. Nor will you be able to gain access to their ROM setup utilities.

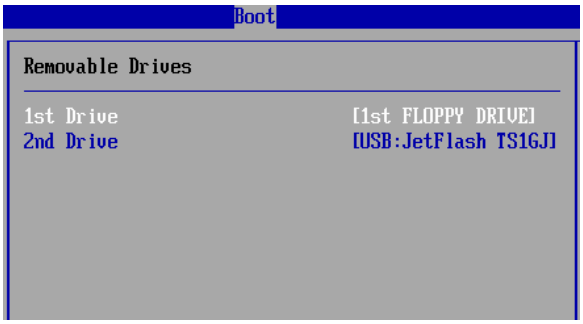
▶ Boot Device Priority



▶ 1st Boot Device

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

▶ Removable Drives



▶ 1st Drive, 2nd Drive

This setting allows users to set the priority of the removable devices. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

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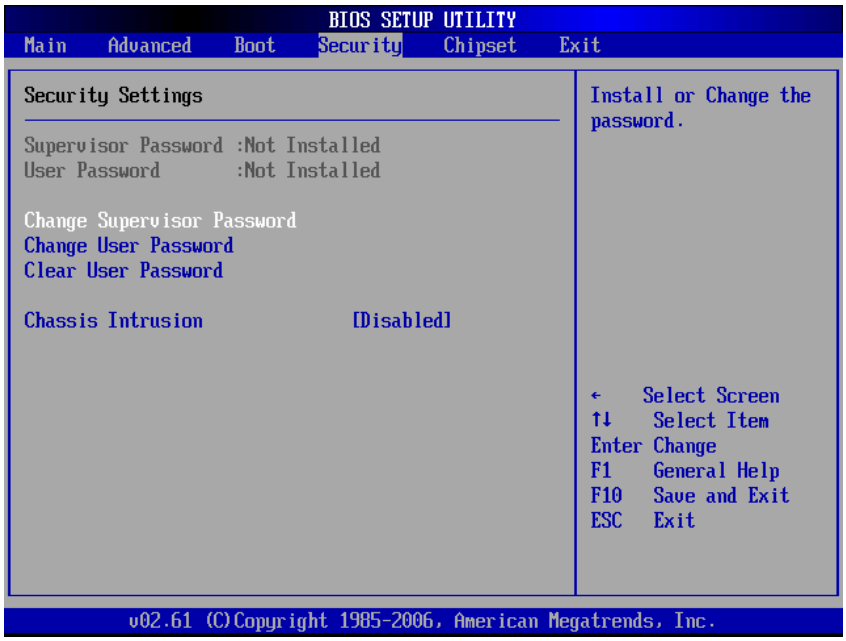
Security

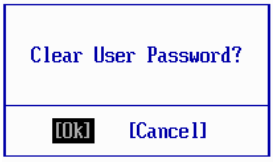


▶ Supervisor Password / Change Supervisor Password

Supervisor Password controls access to the BIOS Setup utility. These settings allow you to set or change the supervisor password.

▶ User Password / Change User Password / Clear User Password

User Password controls access to the system at boot. These settings allow you to set, change, or clear the user password.



▶ Chassis Intrusion

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later.

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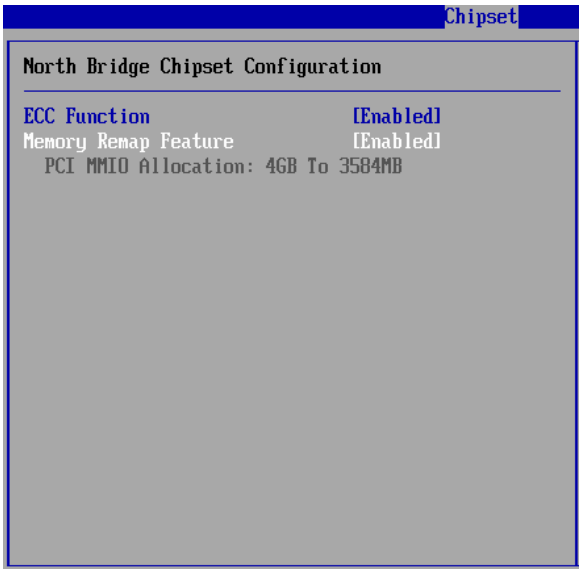
Chipset

BIOS SETUP UTILITY
Main Advanced Boot Security Chipset Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below sections
may cause system to malfunction.
North Bridge Configuration
South Bridge Configuration
Configure North Bridge features.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.

▶ North Bridge Configuration



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Chipset

▶ ECC Function

This setting enables/disables ECC (Error Correction Code) checking, a method of checking the integrity of data in DRAM. ECC provides more elaborate error detection than parity; ECC can detect multiple-bit errors and can locate and correct single-bit errors.

▶ Memory Remap Feature

The memory remapping feature allows for the segment of system memory that was previously overwritten by the Peripheral Component Interconnect (PCI) configuration space to be remapped above the 4 GB address line.

▶ South Bridge Configuration

▶ USB 2.0 Controller

Set to [Enabled] if you need to use any USB 2.0 device in the operating system that does not support or have any USB 2.0 driver installed, such as DOS and SCO Unix.

▶ Restore on AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Power Off] Leaves the computer in the power off state.
[Power On] Leaves the computer in the power on state.
[Last State] Restores the system to the previous status before power failure or interrupt occurred.

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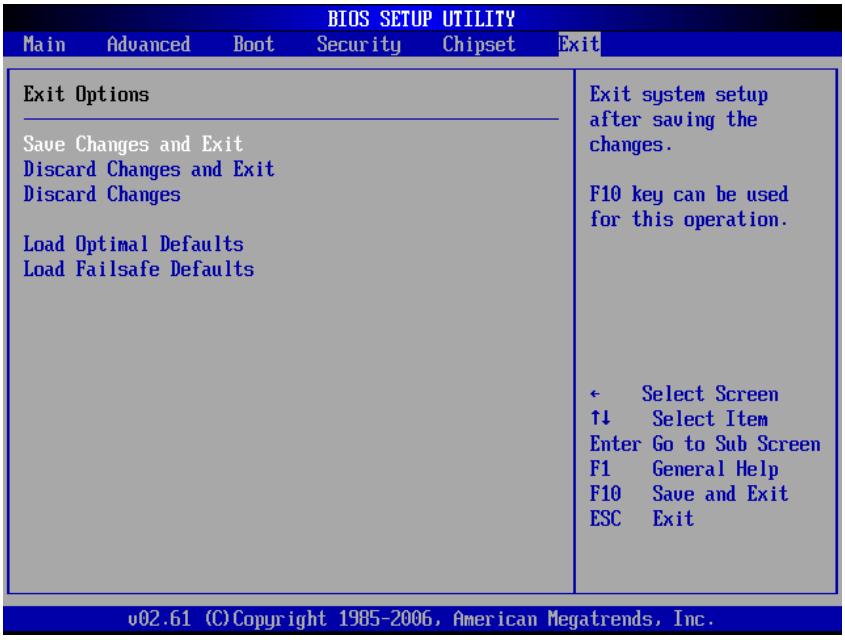
Exit


BIOS SETUP UTILITY
Main Advanced Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.

▶ Save Changes and Exit
Save changes to CMOS and exit the Setup Utility.

▶ Discard Changes and Exit
Abandon all changes and exit the Setup Utility.

▶ Discard Changes
Abandon all changes and continue with the Setup Utility.

▶ Load Optimal Defaults
Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

▶ Load Failsafe Defaults
Use this menu to load the default values set by the BIOS vendor for stable system performance.

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Appendix A
Intel ICH9R SATA RAID

This appendix will assist users in configuring and enabling RAID functionality on platforms
The ICH9R RAID solution supports RAID level 0 (striping), RAID level 1 (mirroring), RAID level 5 (striping with parity) and RAID level 10 (striping and mirroring).

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ICH9R Introduction

The ICH9R provides a hybrid solution that combines 6 independent SATAII ports for support of up to 6 Serial ATAII (Serial ATAII RAID) drives.

Serial ATAII (SATAII) is the latest generation of the ATA interface. SATA hard drives deliver blistering transfer speeds up to 300MB/sec. Serial ATA uses long, thin cables, making it easier to connect your drive and improving the airflow inside your PC. The most outstanding features are:

1. Supports 300MB/s transfers with CRC error checking.
2. Supports Hot-plug-n-play feature.
3. Data handling optimizations including tagged command queuing, elevator seek and packet chain command.

Intel® ICH9R offers RAID level 0 (Striping), RAID level 1 (Mirroring and Duplexing), RAID level 5 (Block Interleaved Distributed Parity), RAID level 10 (A Stripe of Mirrors) and Intel® Martix Storage Technology.

RAID 0 breaks the data into blocks which are written to separate hard drives. Spreading the hard drive I/O load across independent channels greatly improves I/O performance. RAID 1 provides data redundancy by mirroring data between the hard drives and provides enhanced read performance. RAID 5 Provides data striping at the byte level and also stripe error correction information. This results in excellent performance and good fault tolerance. Level 5 is one of the most popular implementations of RAID. RAID 10 Not one of the original RAID levels, multiple RAID 1 mirrors are created, and a RAID 0 stripe is created over these. Intel Matrix RAID Technology is the advanced ability for two RAID volumes to share the combined space of two hard drives being used in unison.

Important

The least number of hard drives for RAID 0, RAID 1 or Matrix mode is 2. The least number of hard drives for RAID 10 mode is 4. And the least number of hard drives for RAID 5 mode is 3.
All the information/ volumes/ pictures listed in your system might differ from the illustrations in this appendix.

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BIOS Configuration

The Intel Matrix Storage Manager Option ROM should be integrated with the system BIOS on all motherboards with a supported Intel chipset. The Intel Matrix Stroage Manager Option ROM is the Intel RAID implementation and provides BIOS and DOS disk services. Please use <Ctrl> + <I> keys to enter the “Intel(R) RAID for Serial ATA” status screen, which should appear early in system boot-up, during the POST (Power-On Self Test). Also, you need to enable the RAID function in BIOS to create, delete and reset RAID volumes.

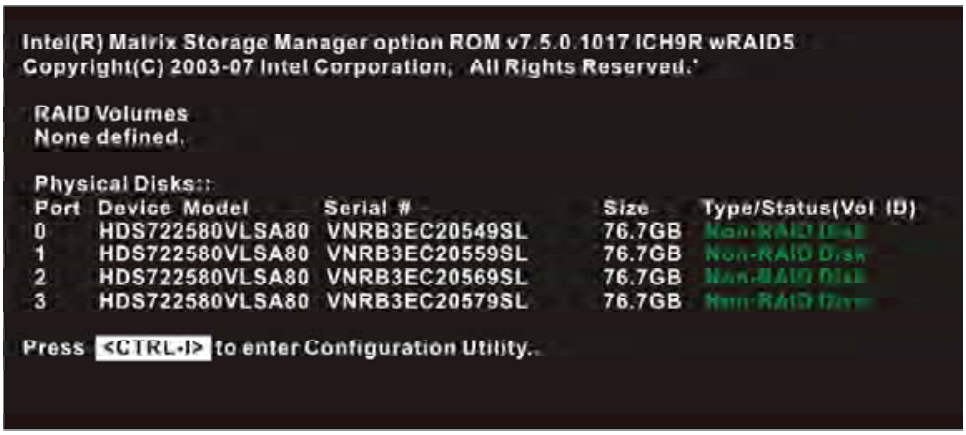
Using the Intel Matrix Stroage Manager Option ROM

1. Creating, Deleting and Resetting RAID Volumes:

The Serial ATA RAID volume may be configured using the RAID Configuration utility stored within the Intel RAID Option ROM. During the Power-On Self Test (POST), the following message will appear for a few seconds:

Important

The “Driver Model”, “Serial #” and “Size” in the following example might be different from your system.


Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
RAID Volumes
None defined.
Physical Disks::
Port Device Model Serial # Size Type/Status(Vol ID)
0 HDS722580VLSA80 VNRB3EC20549SL 76.7GB
1 HDS722580VLSA80 VNRB3EC20559SL 76.7GB
2 HDS722580VLSA80 VNRB3EC20569SL 76.7GB
3 HDS722580VLSA80 VNRB3EC20579SL 76.7GB
Press <CTRL-I> to enter Configuration Utility..

After the above message shows, press <Ctrl> and <I> keys simultaneously to enter the RAID Configuration Utility.

Important

The following procedure is only available with a newly-built system or if you are reinstalling your OS. It should not be used to migrate an existing system to RAID.

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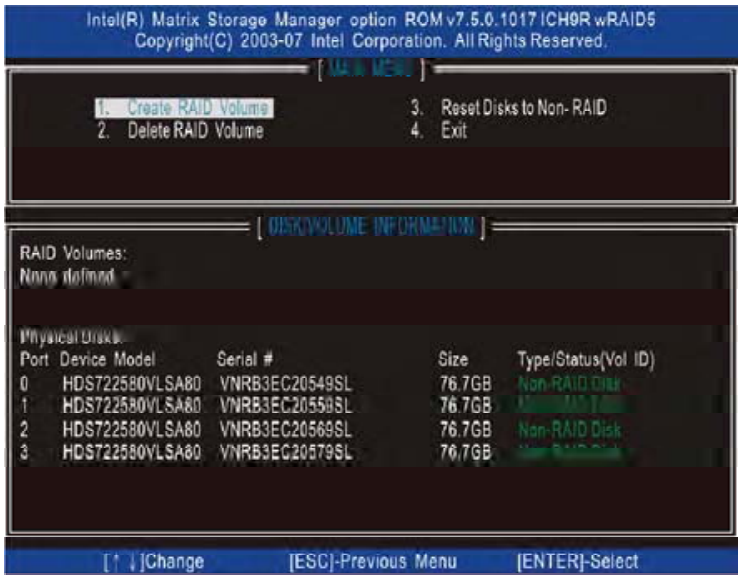
BIOS Configuration

After pressing the <Ctrl> and <I> keys simultaneously, the following window will appear:


Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non- RAID
4. Exit
RAID Volumes:
None defined.
Port Device Model Serial # Size Type/Status(Vol ID)
0 HDS722580VLSA80 VNRB3EC20549SL 76.7GB Non-RAID Disk
1 HDS722580VLSA80 VNRB3EC20558SL 76.7GB
2 HDS722580VLSA80 VNRB3EC20569SL 76.7GB Non-RAID Disk
3 HDS722580VLSA80 VNRB3EC20579SL 76.7GB
[↑ ↓]Change [ESC]-Previous Menu [ENTER]-Select

(1) Create RAID Volume

1. Select option 1 “Create RAID Volume” and press <Enter> key. The following screen appears. Then in the **Name** field, specify a RAID Volume name and then press the <TAB> or <Enter> key to go to the next field.
2. Use the arrow keys to select the RAID level best suited to your usage model in **RAID Level**.

Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
Name: Volume0
RAID Level: RAID5(Parity)
Disks: Select Disks
Strip Size: 64KB
Capacity: 228.0 GB
Create Volume
Choose the RAID level:
RAID0 - Stripes data (performance).
RAID1 - Mirrors data (redundancy).
RAID10 - Mirrors data and stripes the mirror.
RAID5 - Stripes data and parity.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

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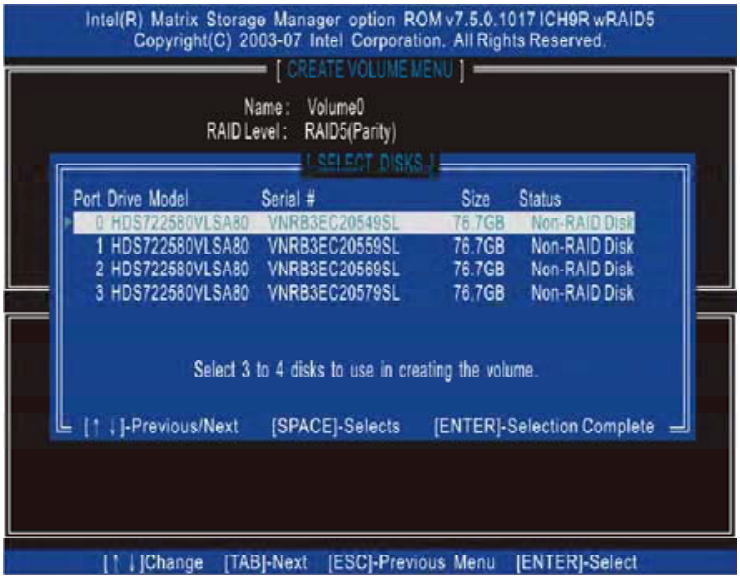
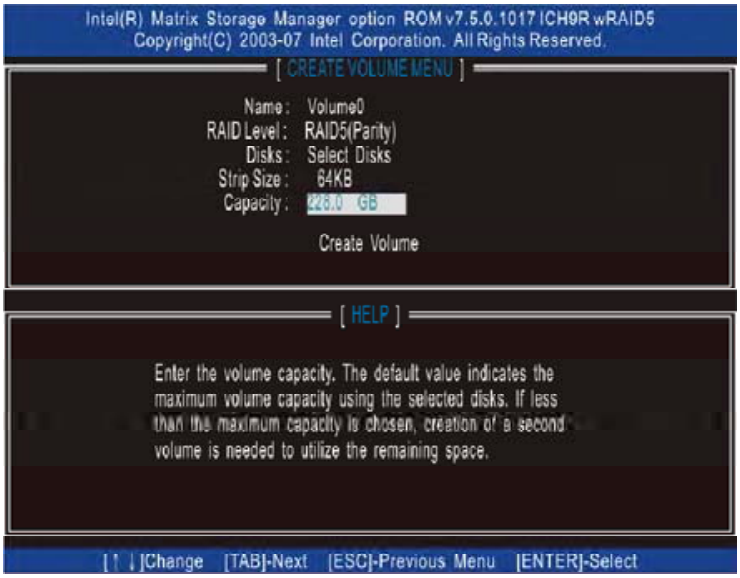
BIOS Configuration

3. In the **Disk** field, press <Enter> key and the following screen appears. Use <Space> key to select the disks you want to create for the RAID volume, then click <Enter> key to finish selection.


Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID5(Parity)
[SELECT DISKS]
Port Drive Model Serial # Size Status
0 HDS722580VLSA80 VNRB3EC20549SL 76.7GB Non-RAID Disk
1 HDS722580VLSA80 VNRB3EC20559SL 76.7GB Non-RAID Disk
2 HDS722580VLSA80 VNRB3EC20569SL 76.7GB Non-RAID Disk
3 HDS722580VLSA80 VNRB3EC20579SL 76.7GB Non-RAID Disk
Select 3 to 4 disks to use in creating the volume.
[↑ ↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

4. Then select the strip value for the RAID array by using the “upper arrow “down arrow” keys to scroll through the available values, and pressing the <Enter> key to select and advance to the next field. The available values range from 4KB to 128 KB in power of 2 increments. The strip value should be chosen based on the planned drive usage. Here are some typical values:
   RAID0 – 128KB
   RAID10 – 64KB
   RAID5 – 64KB
5. Then select the capacity of the volume in the **Capacity** field. The default value is the maximum volume capacity of the selected disks.


Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID5(Parity)
Disks: Select Disks
Strip Size: 64KB
Capacity: 228.0 GB
Create Volume
[HELP]
Enter the volume capacity. The default value indicates the maximum volume capacity using the selected disks. If less than the maximum capacity is chosen, creation of a second volume is needed to utilize the remaining space.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

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BIOS Configuration

Important

Since you want to create two volumes (Intel Matrix RAID Technology), this default size (maximum) needs to be reduced. Type in a new size for the first volume. As an example: if you want the first volume to span the first half of the two disks, re-type the size to be half of what is shown by default. The second volume, when created, will automatically span the remainder of two hard drives.

6. Then the following screen appears for you to confirm if you are sure to create the RAID volume. Press <Y> to continue.

Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID5(Parity)
Disks: Select Disks
Strip Size: 64KB
Capacity: 228.0 GB
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST
Are you sure you want to create this volume? (Y/N):
Press ENTER to Create the specified volume.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

7. Then the following screen appears to indicate that the creation is finished.

Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disk to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes::
ID Name Level Strip Size Status Bootable
0 Volume0 RAID5(Parity) 64KB 228.0GB Yes
Physical Disks::
Port Device Model Serial # Size Type/Status(Vol ID)
0 HDS722580VLSA80 VNRB3EC20549SL 76.7GB Member Disk(0)
1 HDS722580VLSA80 VNRB3EC20559SL 76.7GB
2 HDS722580VLSA80 VNRB3EC20569SL 76.7GB Member Disk(0)
3 HDS722580VLSA80 VNRB3EC20579SL 76.7GB
[↑ ↓]Change [ESC]-Previous Menu [ENTER]-Select

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BIOS Configuration

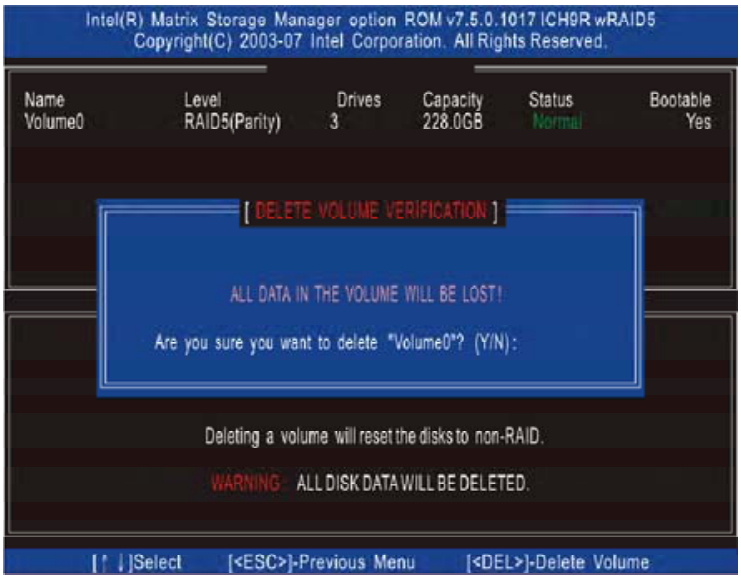
(2) Delete RAID Volume

Here you can delete the RAID volume, but please be noted that all data on RAID drives will be lost.

Important

If your system currently boots to RAID and you delete the RAID volume in the Intel RAID Option ROM, your system will become unbootable.

Select option 2 **Delete RAID Volume** from the main menu window and press <Enter> key to select a RAID volume for deletion. Then press <Delete> key to delete the selected RAID volume. The following screen appears.

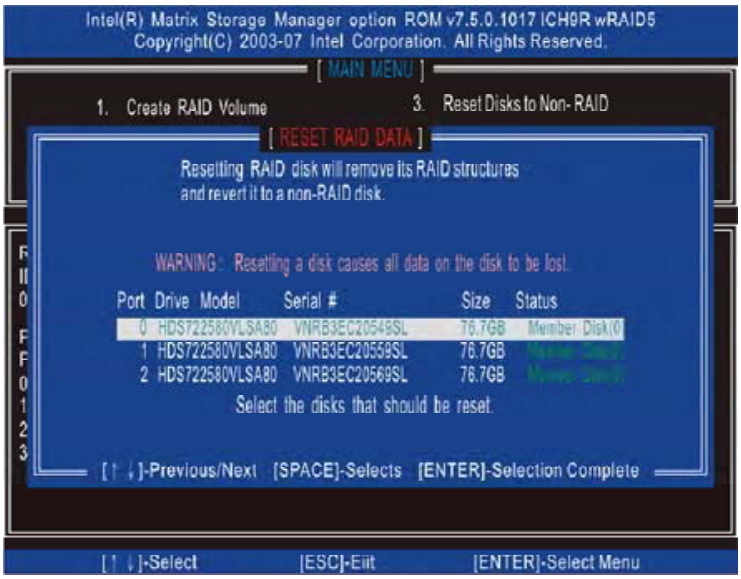

Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
Name Level Drives Capacity Status Bootable
Volume0 RAID5(Parity) 3 228.0GB Normal Yes
[DELETE VOLUME VERIFICATION]
ALL DATA IN THE VOLUME WILL BE LOST!
Are you sure you want to delete "Volume0"? (Y/N):
Deleting a volume will reset the disks to non-RAID.
WARNING: ALL DISK DATA WILL BE DELETED.
[↑ ↓]Select [<ESC>]-Previous Menu [<DEL>]-Delete Volume

Press <Y> key to accept the volume deletion.

BIOS Configuration

(3) Reset Disks to Non-RAID

Select option 3 **Reset Disks to Non-RAID** and press <Enter> to delete the RAID volume and remove any RAID structures from the drives. The following screen appears:


Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
3. Reset Disks to Non-RAID
[RESET RAID DATA]
Resetting RAID disk will remove its RAID structures
and revert it to a non-RAID disk.
WARNING: Resetting a disk causes all data on the disk to be lost.
Port Drive Model Serial # Size Status
0 HDS722580VLSA80 VNRB3EC20548SL 76.7GB Member Disk(0
1 HDS722580VLSA80 VNRB3EC20559SL 76.7GB
2 HDS722580VLSA80 VNRB3EC20569SL 76.7GB
Select the disks that should be reset.
[↑ ↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete
[↑ ↓]-Select [ESC]-Exit [ENTER]-Select Menu

Press <Y> key to accept the selection.

Important

1. *You will lose all data on the RAID drives and any internal RAID structures when you perform this operation.*
2. *Possible reasons to 'Reset Disks to Non-RAID' could include issues such as incompatible RAID configurations or a failed volume or failed disk.*

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Installing Driver

Install Driver in Windows Vista / XP / 2003

New Windows Vista / XP / 2003 Installation

The following details the installation of the drivers while installing Windows XP / 2003.

1. When you start installing Windows XP and older operating systems, you may encounter a message stating, “Setup could not determine the type of one or more mass storage devices installed in your system”. If this is the case, then you are already in the right place and are ready to supply the driver. If this is not the case, then press F6 when prompted at the beginning of Windows setup.
2. Press the “S” key to select “Specify Additional Device”.
3. You should be prompted to insert a floppy disk containing the Intel® RAID driver into the A: drive.
   Note: For Windows Vista you can use Floppy, CD/DVD or USB.

Important

*Please follow the instruction below to make an **“Intel® RAID Driver”** for yourself.*

1. Insert the driver CD into the CD-ROM drive.
2. Click the “Browse CD” on the Setup screen.
3. Copy all the contents in \\IDE\Intel\ICH9R\Floppy to a formatted floppy diskette.
*4. The driver diskette for **Intel® ICH9R RAID Controller** is done.*

4. For Windows Vista:
   During the Operating system installation, after selecting the location to install Vista click on “Load Driver” button to install a third party SCSI or RAID driver.
5. When prompted, insert the floppy disk or media (Floppy, CD/DVD or USB) you created in step 3 and press Enter.
6. Select “Intel(R) ICH8R/ICH9R SATA RAID Controller” an press ENTER.
7. The next screen should confirm that you have selected the Intel® RAID controller. Press ENTER again to continue.
8. You have successfully installed the Intel® Matrix Storage Manager driver, and Windows setup should continue.
9. Leave the disk in the floppy drive until the system reboots itself. Windows setup will need to copy the files from the floppy again after the RAID volume is formatted, and Windows setup starts copying files.

Existing Windows Vista/XP/2003 Driver Installation

1. Insert the driver CD into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the Driver tab, click on ***Intel IAA RAID Edition***.
4. The drivers will be automatically installed.

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Installing Driver

Confirming Windows Vista/XP/2003 Driver Installation

1. From Windows Vista/XP/2003, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "**+**" in front of the **SCSI and RAID Controllers** hardware type. The driver ***Intel(R) ICH9R SATA RAID Controller*** should appear.

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Installing Software

Install Intel Matrix Storage Console

The Intel Application Accelerator RAID Edition driver may be used to operate the hard drive from which the system is booting or a hard drive that contains important data. For this reason, you cannot remove or un-install this driver from the system after installation; however, you will have the ability to un-install all other non-driver components.

Insert the driver CD and click on the **Intel Matrix Storage Manager** to install the software.

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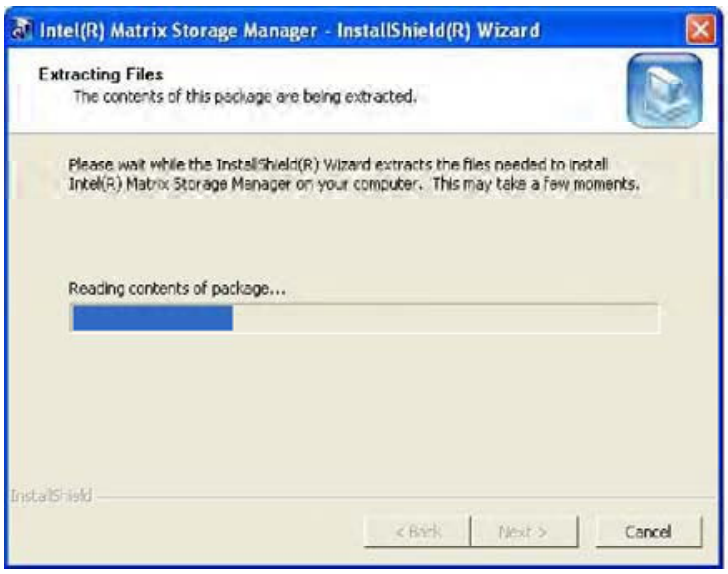
Installing Software

The **InstallShield Wizard** will begin automatically for installation showed as following:


Intel(R) Matrix Storage Manager - InstallShield(R) Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield(R) Wizard extracts the files needed to install Intel(R) Matrix Storage Manager on your computer. This may take a few moments.
Reading contents of package...
InstallShield
< Back
Next >
Cancel

Click on the **Next** button to proceed the installation in the welcoming window.

Intel(R) Matrix Storage Manager 7.5.0.1017
intel
Welcome to the setup for the Intel(R) Matrix Storage Manager.
This setup program will install Intel(R) Matrix Storage Manager onto your computer. It is strongly recommended that you exit all Windows programs before continuing setup.
< Back
Next >
Cancel
InstallShield Installation Framework

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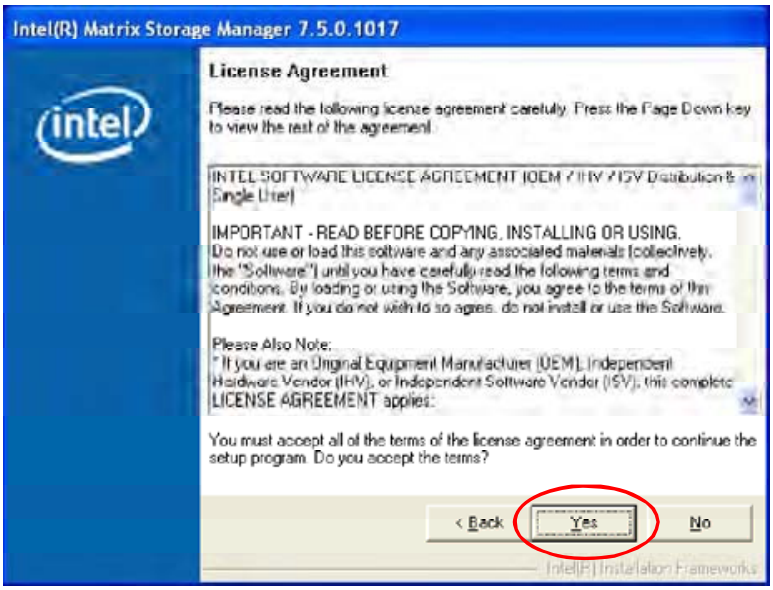
Installing Software

The window shows the components to be installed. Click **Next** button to continue.

Intel(R) Matrix Storage Manager 7.5.0.1017
Warning!
Please read the following information:
The driver you are about to install might be used to control the hard drive from which this computer is booting or to control a hard drive that contains important data.
For this reason, you cannot remove or uninstall this driver from the computer after installation. However, you can uninstall other, non-critical components. The following components can be uninstalled:
Intel(R) Matrix Storage Console
Help Documentation
Start Menu Shortcuts
System Tray Icon Service
Event Monitor Service
Click Next to continue the setup. Click Cancel to exit the setup.
< Back
Next >
Cancel
InstallShield Installation Framework

After reading the license agreement in the following window, click **Yes** button to continue.


Intel(R) Matrix Storage Manager 7.5.0.1017
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
InstallShield Installation Framework

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Installing Software

The following window appears to show the Readme File Information. It shows the system requirements and installation information.

Intel(R) Matrix Storage Manager 7.5.0.1017
Readme File Information
Refer to the Readme file below to view system requirements and installation information. Press the Page Down key to view the rest of the file.
Installation Readme for Intel(R) Matrix Storage Manager.
Refer to the system requirements for the operating systems supported by Intel(R) Matrix Storage Manager.
This document makes references to products developed by Intel. There are some restrictions on how these products may be used, and what information may be disclosed to others. Please read the Disclaimer section at the bottom of this document, and contact your Intel field representative if you would like more information.
< Back
Next >
Cancel
InstallShield

Once the installation is complete, the following window appears.

Intel(R) Matrix Storage Manager 7.5.0.1017
The setup for the Intel(R) Matrix Storage Manager is complete.
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart my computer now.
No, I will restart my computer later.
Click Finish, then remove any installation media from the drives.
< Back
Finish
InstallShield

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RAID Migration Instructions

The Intel Matrix Storage Console offers the flexibility to upgrade from a single Serial ATA (SATA) hard drive to RAID configuration when an additional SATA hard drive is added to the system. This process will create a new RAID volume from an existing disk. However, several important steps must be followed at the time the system is first configured in order to take advantage of RAID when upgrading to a second SATA hard drive:

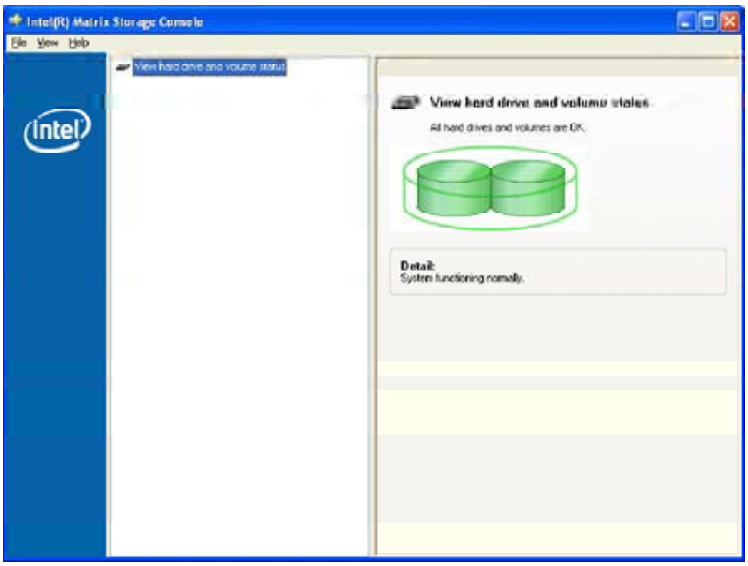
1. BIOS must be configured for RAID before installing Windows on the single SATA hard drive. Refer to **On-Chip ATA Devices** for properly setting of the BIOS.
2. Install the Intel Application Accelerator RAID Driver during Windows Setup. Refer to **Installing Software** for instructions on installing the driver during Windows Setup.
3. Install the Intel Matrix Storage Console after the operating system is installed.

To create a volume from an existing disk, complete the following steps:

Important

*A **Create from Existing Disk** operation will delete all existing data from the added disk and the data cannot be recovered. It is critical to backup all important data on the added disk before proceeding. However, during the migration process, the data on the source disk is preserved.*

After the Intel Matrix Storage Console has been successfully installed and the system has rebooted, click on the Intel Application Accelerator shortcut link (**Start --> All Programs --> Intel Matrix Storage Manager --> Intel Matrix Storage Console** and the following window will appear:)



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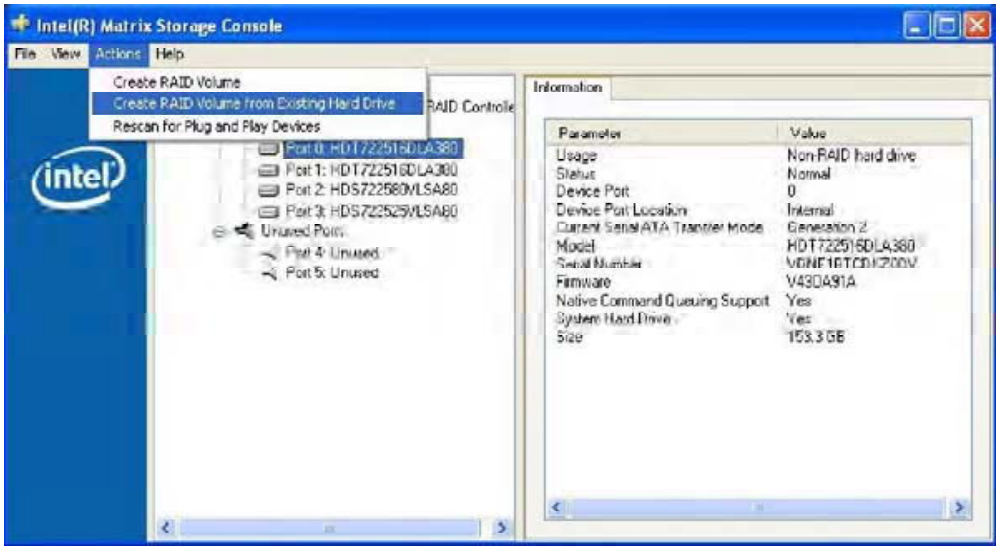
RAID Migration Instructions

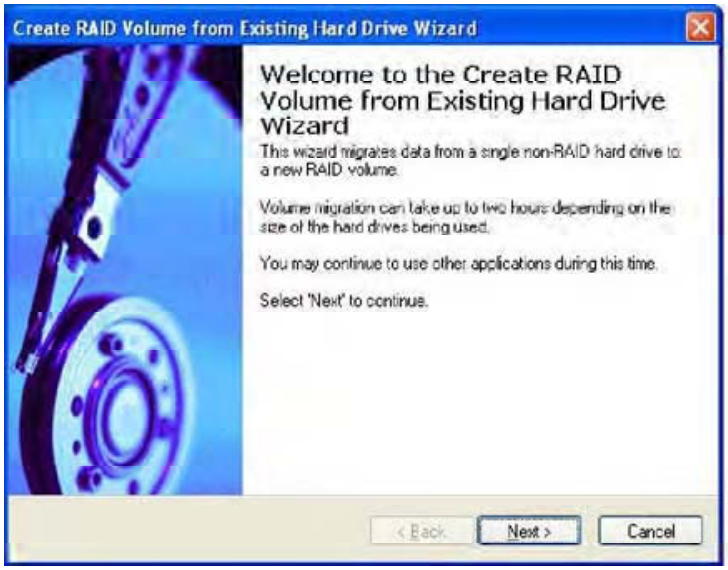
Create RAID Volume from Existing Disk

To create a RAID volume from an existing disk, choose **Action --> Create RAID Volume from Existing Hard Drive**.

Note: The “Action” button only appears in advance mode. To enable the advance mode, go to **View --> Basic mode** and click it.



The **Create RAID Volume from Existing Hard Drive Wizard** pops up to lead you for the following procedure. Click **Next** to continue.


Create RAID Volume from Existing Hard Drive Wizard
Welcome to the Create RAID Volume from Existing Hard Drive Wizard
This wizard migrates data from a single non-RAID hard drive to a new RAID volume.
Volume migration can take up to two hours depending on the size of the hard drives being used.
You may continue to use other applications during this time.
Select 'Next' to continue.
< Back
Next >
Cancel

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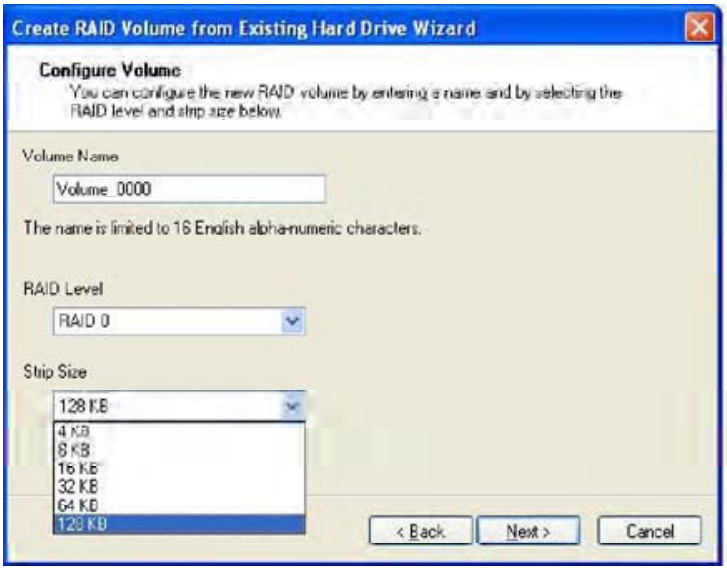
RAID Migration Instructions

(1) Step 1: Configure Volume

Here you can configure the new RAID volume by entering the volume name, selecting the RAID level and strip size.



RAID Volume Name:

A desired RAID volume name needs to be typed in where the 'RAID_Volume1' text currently appears above. The RAID volume name has a maximum limit of 16 characters. The RAID volume name must also be in English alphanumeric ASCII characters.

RAID Level:

Select the desired RAID level:

RAID 0 (Performance) – A volume optimized for performance will allow you to access your data more quickly.

RAID 1 (Redundancy) – A volume optimized for data redundancy will provide you with a realtime duplicate copy of your data. Note: Only half of the available volume space will be available for data storage.

RAID 5 (Useful) – RAID 5 can be used on three or more disks, with zero or more spare-disks. The resulting RAID-5 device size will be (N-1)*S, where N is the how many drive, S is the size of the smallest drive in the array. If one of the disks fail, all data are still intact. It can rebuild the disk from the parity information. If spare disks are available, reconstruction will begin immediately after the device failure. If two disks fail simultaneously, all data are lost. RAID-5 can survive one disk failure, but not two or more. Both read and write performance usually increase, but can be hard to predict how much. Reads are similar to RAID-0 reads, writes can be either rather

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RAID Migration Instructions

expensive (requiring read-in prior to write, in order to be able to calculate the correct parity information), or similar to RAID-1 writes. The write efficiency depends heavily on the amount of memory in the machine, and the usage pattern of the array. Heavily scattered writes are bound to be more expensive.

RAID 10 (Mirrored Stripes) – A RAID 1 array of two RAID 0 arrays.

Strip Sizes:

Select the desired strip size setting. As indicated, the optimal setting is 128KB. Selecting any other option may result in performance degradation. Even though 128KB is the recommended setting for most users, you should choose the strip size value which is best suited to your specific RAID usage model. The most typical strip size settings are:

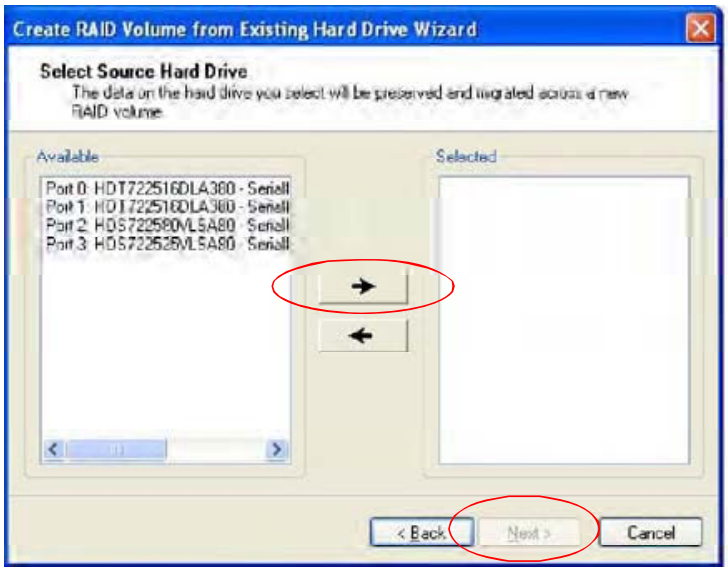
4KB: For specialized usage models requiring 4KB strips
8KB: For specialized usage models requiring 8KB strips
16KB: Best for sequential transfers
32KB: Good for sequential transfers
64KB: Good general purpose strip size
128KB: Best performance for most desktops and workstations

(2) Select the source disk

Then select the source disk that you wish to use and then click **"--->"** to move it to the **Selected** field. Then click **Next** to continue.

It is very important to note which disk is the source disk (the one containing all of the information to be migrated) and which one is the target disk. On a RAID Ready system, this can be determined by making a note during POST of which port the single disk is attached to.

You can also use the Intel Application Accelerator RAID Edition utility before the second disk is installed to verify the Port and serial number of the drive that contains all the data.



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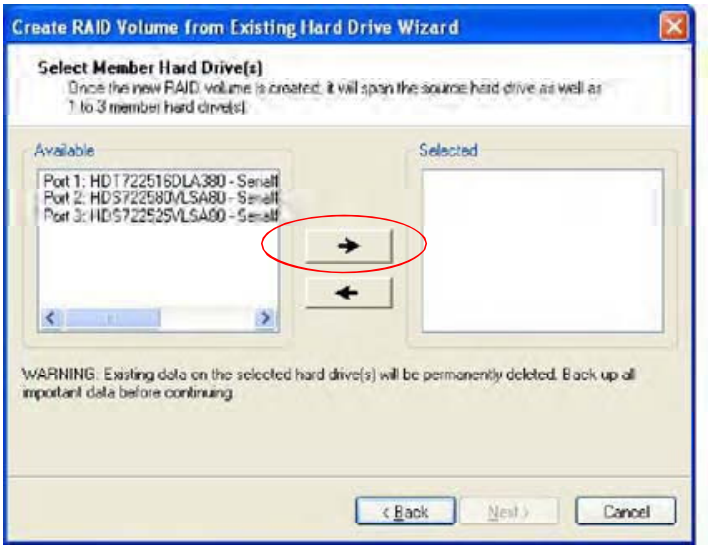
RAID Migration Instructions

(3) Select Member Hard Drive(s)

Then select the member disk (the target disk) that you wish to use and then click **"-->"** to move it to the **Selected** field. Then click **Next** to continue.

Please note that the existing data on the selected hard drive(s) will be deleted permanently. Do not forget to back up all the important data before continuing.


Create RAID Volume from Existing Hard Drive Wizard
Select Member Hard Drive(s)
Once the new RAID volume is created, it will span the source hard drive as well as 1 to 3 member hard drive(s).
Available
Port 1: HDT722516DLA380 - Serial
Port 2: HDS722580VLSA80 - Serial
Port 3: HDS722525VLSA80 - Serial
Selected
WARNING: Existing data on the selected hard drive(s) will be permanently deleted. Back up all important data before continuing.
< Back
Next >
Cancel

Create RAID Volume from Existing Hard Drive Wizard
Select Member Hard Drive(s)
Once the new RAID volume is created, it will span the source hard drive as well as 1 to 3 member hard drive(s).
Available
Port 2: HDS722580VLSA80 - Serial
Port 3: HDS722525VLSA80 - Serial
Selected
Port 1: HDT722516DLA380 - Serial
WARNING: Existing data on the selected hard drive(s) will be permanently deleted. Back up all important data before continuing.
< Back
Next >
Cancel

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RAID Migration Instructions

(4) Specify Volume Size

Specify the amount of available array space to be used by the new RAID volume. You may enter the amount in the space or use the slider to specify. It is recommended you use 100% of the available space for the optimized usage. For RAID 0 volume, if you do not specify 100% of the hard drive space, the rest hard drive space will be worked as RAID 1 volume, which is the new technology called Intel Matrix RAID. Then click **Next** to continue.

Create RAID Volume from Existing Hard Drive Wizard
Specify Volume Size
Use the fields or the slider below to specify the amount of available array space to be used by the new RAID volume.
Maximum Volume Size (GB):
306.7
Minimum Volume Size (GB):
154.9
Percentage of Available Space:
100
Volume Size (GB):
306.7
The minimum required size for the RAID volume is determined by the size of the source hard drive. If you create a volume that uses less than 100% of the hard drive space, you may create a second RAID volume to use the remaining space.
< Back
Next >
Cancel

(5) Start Creating RAID Volume from Existing Hard Drive Wizard

Before you continue the procedure of RAID volume creation from existing hard drive, read the dialogue box below carefully. Please note that once you click **Finish**, the existing data on the selected hard drive(s) will be deleted permanently and this operation cannot be undone. It is critical that you backup all important data before selecting **Finish** to start the migration process.

Create RAID Volume from Existing Hard Drive Wizard
Completing the Create RAID Volume from Existing Hard Drive Wizard
Volume migration can take up to two hours depending on the size of the hard drives being used.
You may continue to use other applications during this time.
WARNING: Completing this action will permanently delete existing data on the selected hard drive(s). Back up all important data before continuing.
Select 'Finish' to begin migrating data to the new volume.
< Back
Finish
Cancel

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RAID Migration Instructions

(6) Start Migration

The migration process may take up to two hours to complete depending on the size of the disks being used and the strip size selected. A dialogue window will appear stating that the migration process may take considerable time to complete, meanwhile a popup dialogue at the taskbar will also show the migration status. While you can still continue using your computer during the migration process, once the migration process starts, it cannot be stopped. If the migration process gets interrupted and your system is rebooted for any reason, it will pick up the migration process where it left off. You will be provided with an estimated completion time (the remaining time will depend on your system) once the migration process starts.

0% of Volume_0000 Migration Completed
Migration is in progress. When migration is complete, you will need to reboot your system to use the entire volume capacity.
To reopen this dialog at any point during the migration, right-click on the migrating volume while in the Advanced Mode of the Intel(R) Matrix Storage Console and select Show Migration Progress.
0% Complete - Time Remaining: 1 hr 32 min 57 sec

The following screen appears if the migration process is completed successfully. Then you have to reboot your system to use the full capacity of the new volume.

100% of Volume_0000 Migration Completed
Migration Status
The migration was completed successfully. The system will need to be rebooted to use the full capacity of the new volume.
Do you want to reboot the system now?
Yes
No
100% of Volume_0000 Migration Completed

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Degraded RAID Array

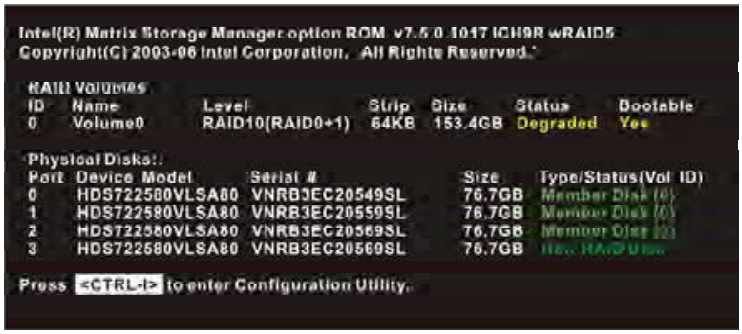
A RAID 1, RAID 5 or RAID 10 volume is reported as degraded when one of its hard drive members fails or is temporarily disconnected, and data mirroring is lost. As a result, the system can only utilize theremaining functional hard drive member. To re-establish data mirroring and restore data redundancy, refer to the procedure below that corresponds to the current situation.

Missing Hard Drive Member

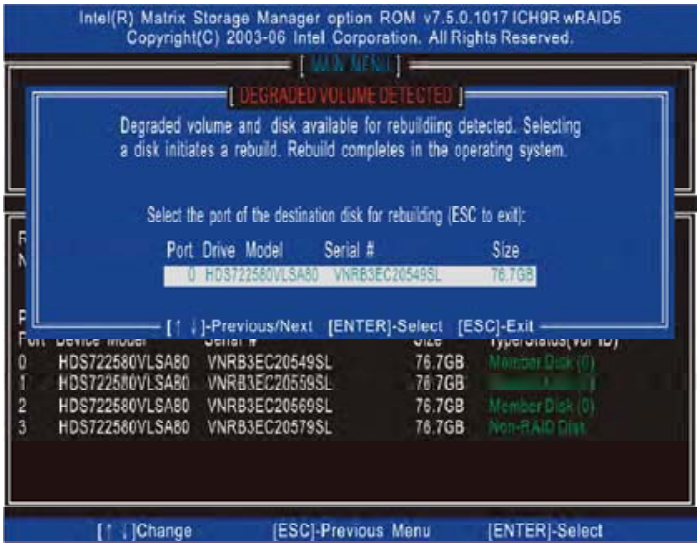
1. Make sure the system is powered off.
2. Reconnect the hard drive.
3. Reboot the system to Windows; the rebuild will occur automatically.

Failed Hard Drive Member

1. Make sure the system is powered off.
2. Replace the failed hard drive with a new one that is of equal or greater capacity.
3. Reboot the system to Intel RAID Option ROM by press <Ctrl> and <I> keys simultaneously during the Power-On Self Test (POST).


Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-06 Intel Corporation. All Rights Reserved.
RAID Volumes
ID Name Level Strip Size Status Bootable
0 Volume0 RAID10(RAID0+1) 64KB 153.4GB Degraded Yes
Physical Disks:
Port Device Model Serial # Size Type/Status(Vol ID)
0 HDS722580VLSA80 VNRB3EC20549SL 76.7GB
1 HDS722580VLSA80 VNRB3EC20559SL 76.7GB
2 HDS722580VLSA80 VNRB3EC20569SL 76.7GB
3 HDS722580VLSA80 VNRB3EC20579SL 76.7GB
Press <CTRL-I> to enter Configuration Utility.

4. Select the port of the destination disk for rebuilding, and then press ENTER.


Intel(R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R wRAID5
Copyright(C) 2003-06 Intel Corporation. All Rights Reserved.
[DEGRADED VOLUME DETECTED]
Degraded volume and disk available for rebuilding detected. Selecting a disk initiates a rebuild. Rebuild completes in the operating system.
Select the port of the destination disk for rebuilding (ESC to exit):
Port Drive Model Serial # Size
[↑ ↓]-Previous/Next [ENTER]-Select [ESC]-Exit
0 HDS722580VLSA80 VNRB3EC20549SL 76.7GB
1 HDS722580VLSA80 VNRB3EC20559SL 76.7GB
2 HDS722580VLSA80 VNRB3EC20569SL 76.7GB
3 HDS722580VLSA80 VNRB3EC20579SL 76.7GB
[↑ ↓]Change [ESC]-Previous Menu [ENTER]-Select

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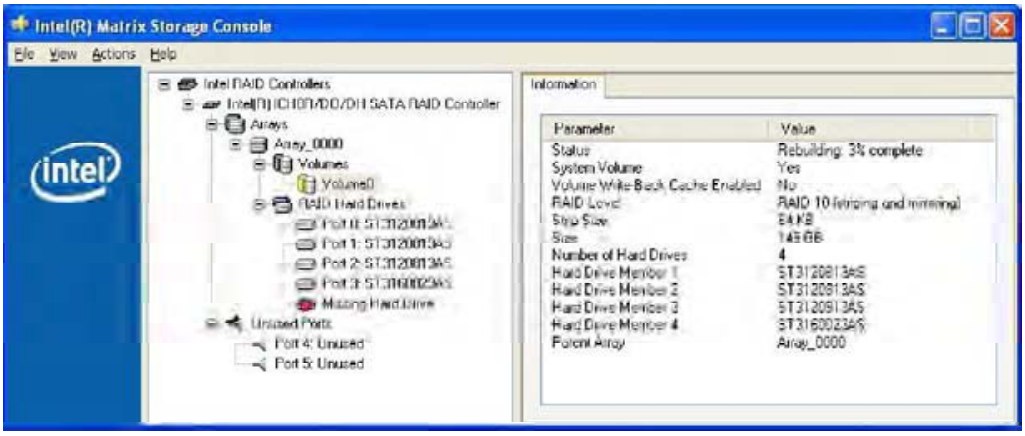
Degraded RAID Array

5. Exit Intel RAID Option ROM, and then reboot to Windows system.
6. When prompted to rebuild the RAID volume, click 'Yes'.
7. The Intel(R) Storage Utility will be launched. Right-click the new hard drive and select 'Rebuild to this Disk'. The 'Rebuild Wizard' will be launched which will guide you through the process of rebuilding to the new hard drive.



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